CALIFORNIA HIGH-SPEED TRAIN

Project Environmental Impact Report / Environmental Impact Statement

Fresno to Bakersfield Section

Preliminary Staff Recommendations: Preferred Alternative

April 2013

CALIFORNIA High-Speed Rail Authority

U.S. Department of Transportation
Federal Railroad Administration

Preliminary Staff Recommendations: Preferred Alternative

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URS/HMM/Arup Joint Venture

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Summary

The purpose of this report is to present the Authority staff's preliminary recommendation for the Preferred Alternative for the Fresno to Bakersfield Section and to provide an evaluation of the identification of the Preferred Alternative. Neither the Draft EIR/EIS nor the Revised DEIR/Supplemental DEIS identified a preference among the alternatives presented.

To facilitate the identification of a preferred HST alignment alternative and station locations in the Final EIR/EIS, the Authority staff will present their recommendation as an information item to the Authority at the April 4, 2013, Board meeting. Staff will request that the Board offer input and direction prior to bringing the recommendation back to the Board in May for its action. The Final EIR/EIS is expected to be published this summer; after which the Authority Board will consider whether to certify the Final EIR/EIS, adopt necessary findings, and take action to approve a north/south alignment and station locations for this portion of the HST System. Following the Board action, it is anticipated that the FRA would issue a Record of Decision (ROD) on the Final EIR/EIS.

A Draft Environmental Impact Report/Environmental Impact Statement (EIR/EIS) on the Fresno to Bakersfield Section of the California High-Speed Train (HST) Project was circulated for public review in August 2011. The extended 60-day comment period ended on October 13, 2011. Based on substantive comments received during the public and agency review of the Draft EIR/EIS, the Authority decided to reintroduce alignment alternatives west of Hanford and through the Bakersfield area. This required circulation of a Revised Draft Environmental Impact Report/Supplemental Draft Environmental Impact Statement (Revised DEIR/Supplemental DEIS) which occurred in July 2012. The normal 45-day comment period was extended for an additional 45 days in response to public requests, resulting in a 90-day comment period. The extended comment period for the Revised DEIR/Supplemental DEIS ended on October 19, 2012. After careful consideration of data in the Draft EIR/EIS, the Revised DEIR/Supplemental DEIS, additional avoidance of Section 4(f) properties, and public comments, a "Preferred Alternative" is preliminarily recommended by staff for the north-south alignment for the Fresno to Bakersfield Section through the city of Shafter. The Preferred Alternative consists of parts of the BNSF Alternative, the Hanford West Bypass 2 Alternative (below grade), the Corcoran Bypass Alternative, and the Allensworth Bypass Alternative. From that point south, technical environmental information indicates that the Preferred Alternative appears to be the Wasco-Shafter Bypass and the Bakersfield Hybrid (see Figure S-1). However, information continues to be received from stakeholders in the Wasco, Shafter, and Bakersfield areas. The Authority wishes to continue to work with these stakeholders to identify the most appropriate HST alignment from Wasco to the project terminus in Bakersfield. As indicated above, current information indicates that the Wasco-Shafter Bypass Alternative and the Bakersfield Hybrid Alternative are also potentially part of the Preferred Alternative. The Preferred Alternative includes a station in downtown Fresno on Mariposa Street, a station in downtown Bakersfield on Truxtun Avenue, and a potential future station site west of Hanford on State Route 198.

The Preferred Alternative provides the least impacts to aquatic resources, the least environmental impacts considering the collective evaluation of natural and community resources, the least impacts on Section 4(f) resources, is the least costly alternative (together with a similar alignment terminating with the Bakersfield South Alternative), has the fewest constructability issues, and therefore best meets the California High-Speed Rail Authority's (Authority's) project objectives and purpose and need.

The Preferred Alternative results in the following:

- Fewer impacts to aquatic resources than the BNSF Alternative and generally incorporates the least impacts to aquatic resources of the individual geographic alternatives.

- Fewer Section 4(f) uses than the BNSF Alternative and fewer than all individual geographic alternatives.
- Fewer effects on residences, commercial and industrial facilities, and community resources than the BNSF Alternative; effects vary by individual geographic alternative.
- Fewer construction impacts such as noise, farmland, air quality, cultural resources, parks, than the BNSF Alternative; effects vary by individual geographic alternative.
- Least constructability issues and lowest cost alternative (together with a similar alignment terminating with the Bakersfield South Alternative).
- Takes only 1 minute longer than the BNSF Alternative between Fresno and Bakersfield, plus adds 1 minute to the Bakersfield to Palmdale segment related to the Bakersfield station.

The estimated cost of the Preferred Alternative is about $800 million less than the BNSF Alternative, and is the lowest cost alternative (a similar alignment terminating with the Bakersfield South Alternative has a comparable cost). The Preferred Alternative avoids the downtown areas of the cities of Corcoran, Wasco, and Shafter and the unincorporated communities of Laton, Grangeville, Armona, and Allensworth. The Preferred Alternative also minimizes constructability issues that can lead to delay and cost escalation.

The Preferred Alternative is similar in impacts or the least impacting alternative consistently over all environmental resources. The environmental process demands a balanced view of the collective resources to inform the decision process. The Authority and Federal Railroad Administration (FRA) anticipate that the EPA and USACE will conclude that the Preferred Alternative is the least environmentally damaging practicable alternative (LEDPA) on the basis of having the fewest effects on aquatic resources and most other environmental resources, consistent with the USACE's permit program (33 Code of Federal Regulations [CFR] Part 320-331) and EPA's Section 404(b)(1) Guidelines (40 CFR 230-233). The Preferred Alternative also has the least use of Section 4(f) resources, based on an FRA least harm analysis.

The Mariposa Alternative was approved as the preferred station location for Downtown Fresno in the Merced to Fresno Section EIR/EIS as certified by the Board on May 3, 2012 and approved with a Record of Decision by the FRA on September 19, 2012. This location best serves the City of Fresno's land use planning, has the most potential for transit-oriented development, and is strongly supported by the city of Fresno.

The Kings/Tulare Regional Station–West Alternative (Hanford West Bypass 2 below grade) is recommended as the location of the optional station in the Hanford area, consistent with the recommended track location. This station is situated between the city of Hanford and the unincorporated community of Armona. The Kings/Tulare Regional Station–West Alternative site is a mixture of industrial and agricultural lands that are located within the growth corridor for the city of Hanford, and the station would be partially consistent with the land use designations and zoning. At the October 16, 2012 Hanford City Council meeting, during an agenda item on the Council's draft letter to the Authority and FRA regarding the Revised DEIR/Supplemental DEIS, by consensus the Council directed staff to remove an alternative comparisons table so that so it could not be used to state the City is in favor of one alternative over another. The Kings/Tulare Regional Station–West Alternative is in a more suitable location than the Kings/Tulare Regional Station–East Alternative for allowing future growth to occur around the station, much like the Fresno and Bakersfield HST stations. State Route 198 would provide access to the station for shuttle bus service from the communities in the region.

Consistent with the recommended Bakersfield Hybrid track location, staff recommends the Bakersfield Hybrid station location in downtown Bakersfield. The Bakersfield Hybrid HST station

would be compatible with local zoning for higher density development and would build upon existing activity centers. The station site is also located immediately south of and within easy walking distance from the existing Amtrak station. The station area and the surrounding regions would realize beneficial effects, including increased employment, recreation, and community cohesion. No incompatible changes in land use patterns or intensities are anticipated in Bakersfield.

In 2003, the Kern Council of Governments (COG) commissioned its own study to determine a community-preferred site for Bakersfield's future high speed rail station. The Kern COG study was not intended to include final station design concepts or cite specific environmental impacts, but was intended as a tool for the Authority to understand the Bakersfield community's concerns as well as to explain potential partnering opportunities. The study evaluated seven station sites identified by the Authority with local input for concerns regarding mobility, access and intermodal connectivity, cost, user convenience, impact on the built environment (business and residential relocations), air quality, economic development, and environmental impacts. On July 1, 2003, the Kern County Board of Supervisors adopted Resolution 2003-290 in support of the Truxtun Avenue terminal site. On July 9, 2003, the Bakersfield City Council voted to adopt Resolution 118-03 endorsing the Truxtun Avenue site as their preferred site. And on September 18, 2003, Kern Council of Governments adopted Resolution 03-23 to designate the Truxtun Avenue terminal site as "the preferred base system local alternative site for the Metropolitan Bakersfield high-speed rail terminal." Based on the extensive planning studies done by Kern COG and supported by the city of Bakersfield and Kern County, the Record of Decision for the Statewide Program EIR/EIS for the California HST System, identified the Truxtun Station as the preferred HST station location in Bakersfield.

Staff recommends that no preferred alternative for the Heavy Maintenance Facility (HMF) be identified at this time. The HMF for the Fresno to Bakersfield Section should be determined as part of the San Jose to Merced EIR/EIS document.

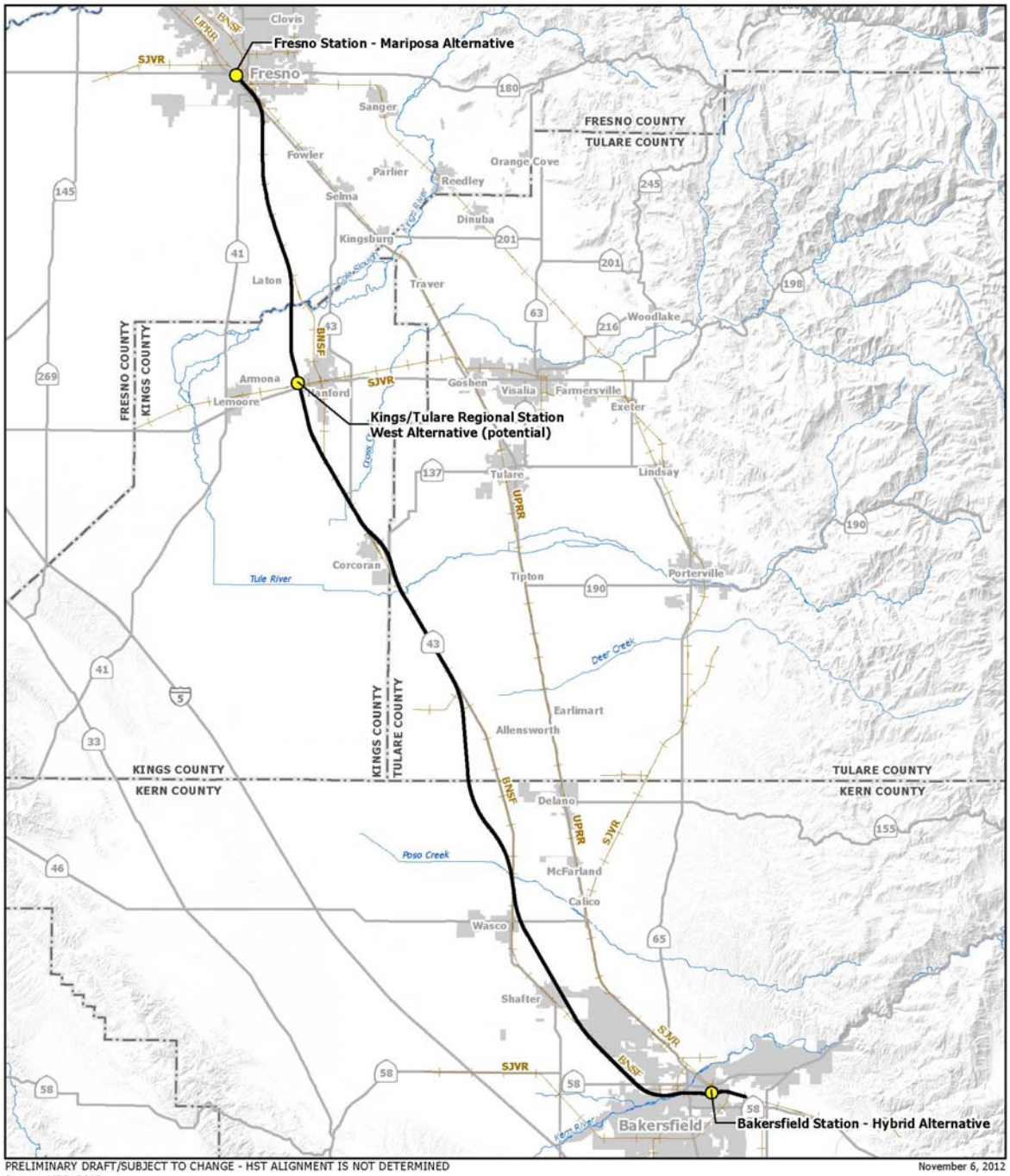

Figure S-1
Fresno to Bakersfield Section Preferred Alternative

Section 1
Introduction

1.0 Introduction

This document presents the Authority staff's preliminary recommendation for the Preferred Alternative for the Fresno to Bakersfield Section and provides an evaluation of the identification of the Preferred Alternative. Neither the Draft EIR/EIS nor the Revised DEIR/Supplemental DEIS identified a preference among the alternatives presented.

To facilitate the identification of a preferred HST alternative and station locations in the Final EIR/EIS, the Authority staff will present their recommendation as an information item to the Authority at the April 4, 2013, Board meeting and provide an opportunity for the Board to offer input and direction to staff. The Final EIR/EIS is expected to be published this summer; after which the Authority Board will consider whether to certify the Final EIR/EIS, adopt necessary findings, and take action to approve a north/south alignment and station locations for this portion of the HST System. Following the Board action; it is anticipated that the FRA would issue a Record of Decision (ROD) on the Final EIR/EIS.

The Fresno to Bakersfield Section EIR/EIS process did not result in a recommendation for the selection of an HMF site. Selecting any of the alternatives and subsequently the east-west connections narrows the number of possible HMF sites that could work with the track alignment. The Merced to Fresno Section EIR/EIS presented HMF options but did not recommend a site. The Merced to Fresno Section Subsequent EIR/Supplemental EIS may provide additional evaluation of HMF options. Ultimately, one site will be selected for the HMF.

While the Authority staff recommends the Wasco-Shafter Bypass Alternative and the Bakersfield Hybrid Alternative as part of the Preferred Alternative, the Authority recognizes that there is no "one size fits all" strategy for every community along the HST system. The Authority continues to receive information from local agricultural stakeholders in the Wasco-Shafter area regarding the HST alignment. The city of Bakersfield's views on the appropriate way of implementing high-speed rail in their community are evolving. The Authority continues in its commitment to work with local communities and stakeholders to ensure their concerns are heard and that Central Valley communities are able to take advantage of the potential benefits of high-speed rail.

The identification of the Preferred Alternative is based upon the data presented in the Fresno to Bakersfield Section Draft EIR/EIS and the Revised DEIR/Supplemental DEIS, including the supporting technical reports, comments received on the Fresno to Bakersfield Section Draft EIR/EIS (the 60-day comment period concluded on October 13, 2011), the Fresno to Bakersfield Section Revised DEIR/Supplemental DEIS (the 90-day comment period ended on October 19, 2012), and comments provided by local communities and stakeholders in meetings following the close of the public comment period on the Revised DEIR/Supplemental DEIS.

The Draft EIR/EIS and the Revised DEIR/Supplemental DEIS provided an overview of the relative differences among physical and operational characteristics and potential environmental consequences associated with the HST alternatives and station location options, including the following:

- Physical/operational characteristics:
  - Alignment
  - Length
  - Capital cost
  - Travel time
  - Ridership
  - Constructability
  - Operational issues.

- Environmental impacts:
  - Transportation-related topics (air quality, noise and vibration, and energy)
  - Human environment (land use and community impacts, farmlands and agriculture, aesthetics and visual resources, socioeconomics, utilities and public services, hazardous materials and wastes)
  - Cultural resources (archaeological resources, historical properties) and paleontological resources
  - Natural environment (geology and seismic hazards, hydrology and water resources, and biological resources and wetlands)
  - Section 6(f) resources (certain types of publicly owned parklands, recreation areas, wildlife/waterfowl refuges, and historical sites).

In identifying a Preferred Alternative, the Authority was guided by the project purpose and need and project objectives found in Chapter 1, Project Purpose, Need, and Objectives of the Revised DEIR/Supplemental DEIS as well as the objectives and criteria as developed for and recorded in the *Visalia-Tulare-Hanford Station Feasibility Study* (VTH Study) (Authority 2007)*, Fresno to Bakersfield Preliminary Alternatives Analysis Report (AA), California High-Speed Rail Authority, Board Briefing* (Preliminary AA Report) (Authority and FRA 2010a), the *Supplemental Alternatives Analysis* (Authority and FRA 2010b), a second *Supplemental Alternatives Analysis* (Authority and FRA 2011b), and a third *Supplemental Alternatives Analysis* (Authority and FRA 2011c), as well as a hybrid alternative alignment developed for the Bakersfield subsection to address substantive comments received during public and agency review of the Draft EIR/EIS. These documents can found at http://www.cahighspeedrail.ca.gov/lib_Fresno_Bakersfield.aspx. Additionally, these criteria are consistent with Section 404(b)(1), Guidelines of the Clean Water Act (40 CFR 230–233), including minimizing impacts on Waters of the U.S. and other sensitive environmental resources. For the Fresno to Bakersfield Section, these include agricultural resources, cultural resources, and parks. Public interest and practicability factors leading to the identification of the Preferred Alternative include the least displacement of residences, commercial and industrial facilities, and key community facilities; and the lowest cost (together with a similar alignment terminating with the Bakersfield South Alternative) among all combinations of alternatives.

As a result of the analyses incorporated in the Draft EIR/EIS, the Revised DEIR/Supplemental DEIS and the subsequent Final EIR/EIS as well as the biological assessment of ecosystems impacts and cultural, and community impacts, the Authority and FRA anticipate that the EPA and USACE will conclude that the Preferred Alternative is the LEDPA, consistent with USACE's permit program (33 CFR Part 320–331) and EPA's Section 404(b)(1) Guidelines (40 CFR 230–233).

Section 2
Summary of Comments

2.0 Summary of Comments

During the comment period, there were 1,479 submissions and 3,174 comments on the Fresno to Bakersfield Section Draft EIR/EIS, and 683 submissions and 4,642 comments on the Revised DEIR/Supplemental DEIS. The comments covered a wide range of issues and represented viewpoints from government agencies, organizations, business groups, businesses, residents, and property owners.

Most comments came from individuals in the general public living, working, or with property interests in the project study area, and local government jurisdictions in Kings and Kern counties. Of the 2,162 submissions, approximately 124 generally supported and 630 were generally opposed to the project. Comments received from the general public and local officials in Kings County strongly opposed any alternative through Kings County. Comments from farmers in the Wasco-Shafter area preferred the BNSF Alternative through Wasco and Shafter to the Wasco-Shafter Bypass even though they owned property along both alignments. This is because the boundary to their fields and orchards had already been established by the BNSF Railway in the case of the BNSF Alternative while the Wasco-Shafter Bypass cuts across many fields and orchards and will significantly interfere with existing agricultural operations. The city of Shafter supports the BNSF Alternative because it more closely fits with their long-term planning vision for the city. Comments received from the general public and local officials in Kern County rejected all alternatives with a station in Downtown Bakersfield, which is opposite of the preference for a downtown station near the existing Amtrak station voiced by the city of Bakersfield, Kern County, and Kern Council of Governments in 2003. The majority of individual and government official comments preferred an alternative that would bypass Bakersfield and locate a station on the outskirts of the city. There was not a clear majority opinion for one alternative over another in the Corcoran and Allensworth areas. Commenters provided pros and cons for each alternative in these two areas of the project.

Among comments received from the general public, effects on agricultural and private property were the top concerns about the project. Also, comments expressed concern over funding availability (including whether any money should be spent on this type of project in light of state and federal budget deficits) and the accuracy of the ridership projections. Other common environmental concerns included noise and vibration, ecosystem effects, neighborhood impacts, and safety.

Many submissions suggested changing the Fresno to Bakersfield Section HST alternatives. Most common among these comments was to consider an alignment adjacent to I-5 that would bypass the Fresno to Bakersfield Section corridor altogether or to locate the alignment along SR 99. In addition, other comments suggested a preference for the State of California to use HST funding for other infrastructure improvements. Many of these comments contended that residents of the San Joaquin Valley did not need and would not use an HST System for travel.

2.1 California Legislators

Congressman Jim Costa, Devin Nunes, Jeff Denham, and Kevin McCarthy, State Senator Michael Rubio, and State Assembly member David Valadao requested a time extension on the public review period for the Draft EIR/EIS. State Assembly member David Valadao also requested a time extension on the public review period for the Revised DEIR/Supplemental DEIS. State Senator Michael Rubio expressed support for the HST in the Central Valley; however, he requested that a decision on an alignment through Downtown Bakersfield be postponed and an alternative alignment south of Bakersfield be considered.

2.2 Project Area Local Governments

The City of Fresno supports the alignment through Fresno, including the Mariposa Street Station Alternative. Kings County and the City of Hanford do not support an HST alignment in Kings County and would prefer the HST to follow SR 99 or I-5. At a Hanford City Council meeting on October 12, 2012, the City Council did not identify a preference for any of the alternatives through Hanford. The City of Corcoran does not agree with any of the three alternatives in or around that city, but believes that the alternatives that cross through town would have greater impacts than the Corcoran Bypass Alternative. The City of Visalia supports the BNSF Alternative east of Hanford and its corresponding HST station. The City of Shafter indicates that the BNSF Alternative through the city would require below-grade crossings for freight at three roads. The City of Shafter also indicates that the Wasco-Shafter Bypass would result in substantial impacts to agricultural operations important to the Shafter's economy. The City of Wasco has stated that an alternative through the city must be located on the east side of the BNSF Railway to avoid major impacts to Wasco's economy. The City of Bakersfield, Kern County, and the Kern Council of Governments do not support an HST alignment through Downtown Bakersfield with a downtown station. They wish to see an alignment that bypasses Downtown Bakersfield with a station on the outskirts of the city.

2.3 Federal Agencies and Tribes

EPA did not express support for a particular alternative, but was concerned with minimizing impacts on wetlands, aquatic resources, air quality, and induced growth. USACE did not support a particular alternative. Amtrak provided detailed comments related to different alternatives and project description information, but did not express support for a specific alternative. The U.S. Department of Interior, Office of Environmental Policy and Compliance sent letters stating they did not have any comments on the EIR/EIS. The Federal Highway Administrative provided comments concerning the interface between the HST and federal highways. The USFWS did not submit a comment letter on the Draft EIR/EIS or the Revised DEIR/Supplemental DEIS.

2.4 State Agencies

State agencies that commented on the Draft EIR/EIS and/or the Revised Draft EIR/Supplemental DEIS were the Department of Conservation, Department of Fish and Wildlife, Department of Toxic Substances Control, Division of Oil, Gas, and Geothermal Resources, State Lands Commission, Department of Resources Recycling and Recovery, Department of Transportation, Public Utilities Commission, Department of Housing and Development, State Water Resources Control Board, Department of Resources Recycling and Recovery, California State University, Bakersfield, and California State University, Fresno. None of the agencies indicated a preference for any alternative. Comments from state agencies primarily provided additional baseline information in their areas of expertise, questions regarding environmental impacts, and clarification of the agencies regulatory responsibilities relative to the HST project.

2.5 Regional and Other Public Agencies

The 40 regional and public agencies submitting comments, most of which were water districts, school districts, and irrigation districts, did not state a preference for a specific alternative.

2.6 Businesses

Comments were received from 132 different businesses, and most comments focused on impacts on their property and/or their business. Businesses whose property would be affected by the project typically stated preference for the alternative that would avoid their property.

Several businesses were concerned about the loss of jobs and if they were acquired and could not be relocated, and about impacts on the economy due to the loss of jobs, businesses, and tax revenue for the local jurisdictions. Some businesses were concerned about impacts during operation and construction, such as loss of access, noise, dust, and visual changes, affecting them.

Forty-four farms or ranches expressed concern about impacts on agriculture and farmlands, such as their ability to comply with Water Quality Control Board regulations and state pesticide and drift regulations with the project, the cost of changes to agricultural infrastructure including irrigation systems and waste disposal systems, increased cost of accessing property split by the HST alignment, the cost of relocating livestock, and the impacts of noise, vibration, dust, and stray voltage on livestock.

Unique businesses in the Fresno to Bakersfield Section are the BNSF Railway and the UPRR, because all alternatives would have some adjacency with these railroad corridors. The BNSF Railway did not comment on the Draft EIR/EIS or the Revised DEIR/Supplemental DEIS. The UPRR provided comments primarily related to their right-of-way and uses proposed in and adjacent to it. They state that their entire right-of-way must be preserved, and the project should not be located within that right-of-way.

2.7 Organizations

Comments were received from 50 special interest or community organizations, including groups representing environmental interests or farming interests, groups organized in response to this project, and groups representing other organized stakeholder groups. Organizations supporting farming interests included the California Farm Bureau Federation; the Farm Bureaus for Fresno and Kings counties; associations for growers and producers; and farmland trusts, and generally felt the analysis of impacts on farmland was inadequate and suggested an alternative that followed I-5 or SR 99 in order to minimize impacts on farmland. Organizations formed in response to the HST Project generally opposed the project and either did not express an alternative preference or requested that the HST follow I-5 or SR 99 or an alignment that bypassed Bakersfield.

2.8 Individuals

The major of comments from individuals came from residents of Kings and Kern counties which voiced many of the same concerns as the local governments of these counties. Most of the comments provided by individuals of Kings County did not want the HST to cross their county, preferring an alternative on either I-5 or SR 99. Most comments from individuals in Kern County were from residents of metropolitan Bakersfield preferring an alternative that bypasses Downtown Bakersfield with a station on the outskirts of the city.

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Section 3
Alternatives Considered

3.0 Alternatives Considered

Following the 2005 Statewide Final Program EIR/EIS, the Authority and FRA selected the BNSF Railway route as the preferred alternative for the Central Valley HST between Fresno and Bakersfield to advance for further study in a second-tier, project-level EIR/EIS. Therefore, the Project EIR/EIS for the Fresno to Bakersfield Section focuses on alternative alignments along the general BNSF Railway corridor.

In addition to the first-tier decision to advance the BNSF corridor, , the Authority and FRA determined to conduct a planning study for the potential location of an HST station in the Visalia/Tulare/Hanford area prior to initiating project-level planning studies for the Fresno to Bakersfield Section. This study, the *Visalia-Tulare-Hanford Station Feasibility Study*, was initiated in 2005 and completed in 2007. In addition to the evaluation of potential station locations in the vicinity of Visalia, along the BNSF and UPRR Corridors, the study covered a much larger scope of analysis considering potential HST alignments between Fresno and Bakersfield, including alignments along segments of the UPRR. The study described associated potential environmental impacts, including impacts on sensitive land uses, farmland, cultural resources, communities, water resources, floodplains, wetlands, sensitive species, and 4(f) resources. The conclusion provided that a station east of Hanford, on the BNSF Alignment, would be capable of serving the Visalia-Tulare-Hanford area. The study also concluded that a UPRR alternative would have greater constructability issues and greater potential noise, cultural, community, and property impacts.

The Authority, in cooperation with FRA, began the environmental review process for the Fresno to Bakersfield Section of the California HST Project, which included a Notice of Intent and Notice of Preparation (published in 2009) and public scoping process in early 2009. As described in Chapter 2.0 of the Revised DEIR/Supplemental DEIS, the Fresno to Bakersfield Section includes nine project alternatives: the BNSF Alternative (a single continuous alignment that extends from Fresno to Bakersfield) and eight additional alignment alternatives (Hanford West Bypass 1, Hanford West Bypass 2, Corcoran Elevated, Corcoran Bypass, Allensworth Bypass, Wasco-Shafter Bypass, Bakersfield South, and Bakersfield Hybrid), which deviate from the BNSF Alternative for portions of the route to avoid environmental, land use, or community impacts (Figure S-1).

These potential alternatives were developed using HST system performance criteria, which were then used to determine the potential effects of the proposed alternatives on the natural and human environment. To define the project-level alternatives to be considered in the formal NEPA/CEQA process, the Authority and FRA prepared the four alternatives analyses (one preliminary report and three supplemental reports) identified above.

3.1 Preliminary Alternatives Analysis – June 2010

Once components were screened to lowest effects and highest HST performance, a Preliminary Alternatives Analysis compared the alternatives against each other and documented the results. While the Preliminary Alternatives Analysis process considered multiple criteria, the screening emphasized the project objective to maximize the use of existing transportation corridors and available rights-of-way, to the extent feasible. The alternatives included in the Preliminary AA Report followed the existing freight corridors of the BNSF corridor and the UPRR, the SR 43 corridor, and an electrical transmission corridor east of Hanford. It divided the corridor into three subsections: Fresno, Rural, and Bakersfield. Linking alternatives from each subsection together formed the complete, end-to-end alternatives for the Fresno to Bakersfield Section.

Fresno Section: The Preliminary AA Report recommended that three alternatives be carried forward for consideration in the EIR/EIS:

- UPRR East.
- UPRR West.
- UPRR West/East Crossover.

All three of these alternatives were assumed to be elevated through Fresno, to be adjacent to the UPRR right-of-way in Fresno, to leave Fresno to the south, generally along the BNSF corridor, and to provide a Downtown Fresno Station near Mariposa Street (Figure 1).

Rural Subsection: The Preliminary AA Report recommended that the BNSF–Hanford East Bypass be carried forward for consideration in the EIR/EIS, with an optional station located between Hanford and Visalia. This recommendation narrowed the range of local options to those related to the BNSF alignment. Among the remaining local options, the Preliminary AA Report recommended that the following be carried forward into the EIR/EIS (Figure 1):

- Elevated through Corcoran.
- Corcoran At-Grade Bypass.
- Allensworth Avoidance.
- Elevated through Wasco and Shafter
- Wasco and Shafter At-Grade Bypass

Bakersfield Subsection: The Preliminary AA Report recommended that two alternatives be carried forward for consideration in the EIR/EIS (Figure 1), with each featuring a station location consistent with the preferred Bakersfield station location in Downtown Bakersfield near Truxtun Avenue in the vicinity of the existing Amtrak station:

- Bakersfield North Alternative (D2-N).
- Bakersfield South Alternative (D1-S).

The analysis in the Preliminary AA Report recommended four HMF sites for further analysis in the Draft EIR/EIS:

- The Fresno Works–Fresno HMF Site.
- The Kings County–Hanford HMF Site.
- The Kern Council of Governments–Wasco HMF Site.
- The Kern Council of Governments–Shafter East HMF Site.

3.2 Supplemental Alternatives Analysis – September 2010

In September 2010, in response to concerns about the potential impacts to agricultural lands and the operation of the BNSF Hanford East Alternative, the Authority issued a Supplemental Alternatives Analysis. This analysis identified two alignment options (H1 and H2) that would essentially follow the BNSF right-of-way through Hanford. The two options differed principally in terms of the location of a potential station.

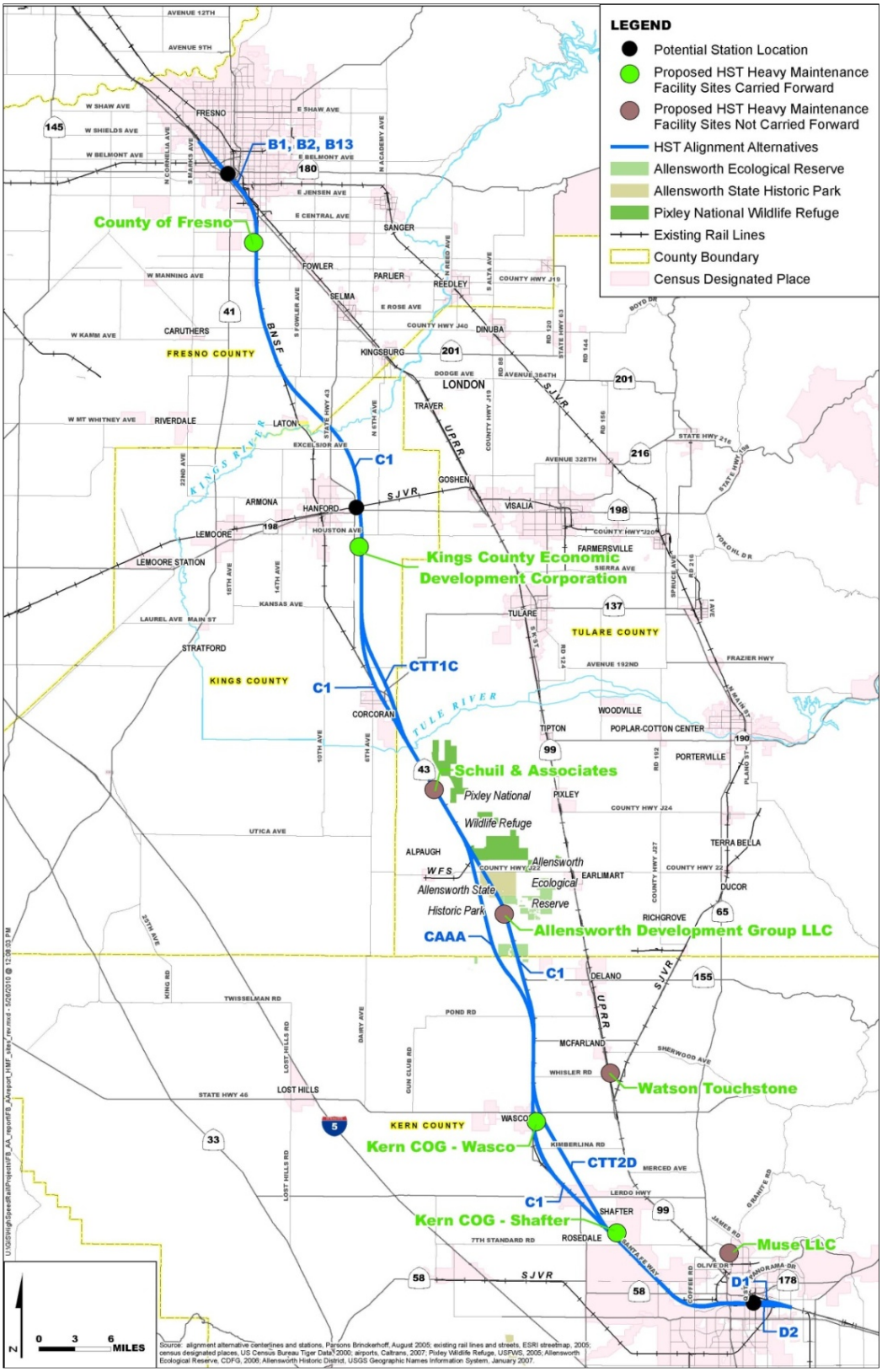

Figure 1
Alternatives Carried Forward and Heavy Maintenance Facility Sites

Under Option H1, the alignment was designed to accommodate a station in Downtown Hanford located just north of the intersection of Lacey Boulevard and 11th Avenue, in an area occupied by a shopping center. Because of its urban location, the station parking under this option was to be accommodated in a multi-level structure. Under Option H2, the alignment generally followed the BNSF right-of-way all of the way through Hanford, and the potential station was located approximately halfway between Hanford-Armona Road and Houston Avenue, at the southern edge of Hanford. The September 2010 Supplemental Alternatives Analysis recommended that neither of these alternatives be carried forward into the Draft EIR/EIS, because relative to the BNSF–Hanford East Alternative, they would have increased residential, business, and public facility relocations by about an order of magnitude, extend noise impacts to another 1,200 receptors, directly take property from two parks, increase visual impacts to 2,000 residents, and reduced connectivity for a potential regional station. In addition, there is no community support for an alignment through Hanford.

On September 2, 2010, the Authority Board considered and accepted the recommendations of the September 2010 Supplemental Alternatives Analysis (Authority 2010b). Thus, no changes were made to the alternatives being developed for consideration in the Draft EIR/EIS.

3.3 Supplemental Alternatives Analysis – May 2011

In May 2011, the Authority issued a second Supplemental Alternatives Analysis which presented documentation and analysis of recommended modifications to the alternatives contained in the prior reports, including the following:

- Addition of new alternatives (alignments, station sites, and HMF sites).
- Removal of existing alternatives.
- Shifts in the horizontal alignments of alternatives.
- Changes in the profiles of existing alternatives from elevated to at-grade.

Each of the modifications recommended in the May 2011 Supplemental Alternatives Analysis was based on one or more of the following benefits:

- Reduced impacts on sensitive natural resources and urban populations.
- Increased benefits to local residents, property owners, and business owners.
- Reduced project and stakeholder costs.
- A project with fewer impacts that is more cost-effective overall.

The recommended modifications were as follows:

3.3.1 Fresno Subsection:

- Change the UPRR West Alternative profile from elevated to at-grade from San Joaquin Street to Jensen Avenue.
- Add an alternative station location at Mariposa Street.
- Remove UPRR East and Crossover Alternatives from further consideration.

3.3.2 Hanford/Kings County Subsection:

- Shift the existing alignment between Conejo and Corcoran in two locations ([1] between Conejo and the proposed Kings/Tulare Regional Station (east of Hanford at SR 198) and [2] between Idaho Avenue (south of the Kings/Tulare Regional Station) and Niles Avenue just north of Corcoran).

3.3.3 Corcoran Subsection:

- Add a new alternative west of BNSF at-grade.
- Shift the Preferred Corcoran Alternative closer to Corcoran.

3.3.4 Allensworth Subsection:

- Shift the Allensworth Bypass Alternative to the west.

3.3.5 Wasco-Shafter Subsection:

- Shift the BNSF Alternative closer to BNSF tracks near Kimberlina Road.
- North of Shafter: Change the BNSF Alternative profile from elevated to at-grade.
- South of Shafter: Change the BNSF Alternative profile from elevated to at-grade, and shift the alignment from east to west of the BNSF tracks. Shift the Wasco-Shafter Bypass Alternative slightly to the east.
- Add a new Shafter candidate HMF site west of the BNSF tracks.

3.3.6 Bakersfield Subsection:

- Change the profile from elevated to at-grade between Hageman Road and Palm Avenue.

3.3.7 Use of BNSF Right-of-Way:

- Clarify that alternatives would be adjacent to BNSF right of way rather than share BNSF right-of-way.

On May 5, 2011, the Authority Board considered and accepted the recommendations of the May 2011 Supplemental Alternatives Analysis (Authority 2011a). With these recommendations, in conjunction with the recommendations of the Preliminary AA Report, the project description and the alternatives to be considered in the Draft EIR/EIS were established, and served as the basis for the alternatives contained in the Draft EIR/EIS that was published in August 2011.

3.4 Supplemental Alternatives Analysis (December 2011)

In December 2011, following circulation of the Draft EIR/EIS, the Authority issued a third Supplemental Alternatives Analysis which presented documentation and analysis of a recommended new alignment and station location west of Hanford in Kings County in response to stakeholder, agency, and public feedback on the HST alignment that bypasses Hanford to the east. The following general characteristics of a new Hanford West Bypass Alternative were defined:

- Between Conejo and Corcoran, it would remain adjacent to the BNSF tracks to the greatest extent possible.

- It would run primarily at-grade, though other profiles in the general area of SR 198 and the SJVR–Cross-Valley Railroad tracks would be possible.

- It would have two variations at the south end to join with either the Corcoran C1 and C2 alignments (east side of the BNSF tracks) or the Corcoran C3 alignment (west side of the BNSF tracks).

- It would be defined to minimize impacts on dairies, wetlands, other agricultural lands, housing, and community facilities, while providing a feasible, cost-effective option for the Authority.

The December 2011 Supplemental Alternatives Analysis recommended that the HW Alternative be carried forward for impact analysis and inclusion in the Revised DEIR/Supplemental DEIS, and that a station alternative be located east of 13th Avenue and north of SVJR, to afford the best opportunity for intermodal connections, including regional bus service, Amtrak service (via a shuttle to the Downtown Hanford Station), and potential future commuter rail service using the SJVR. This location was also determined to provide the best opportunity for transit-oriented development, particularly due to its superior access to Downtown Hanford and the city's principal retail and office corridor (Lacey Boulevard).

On December 13, 2011, the Authority Board considered and accepted the recommendations of the December 2011 Supplemental Alternatives Analysis (Authority 2011b). With these recommendations, the project description and alternatives to be considered in the Revised DEIR/Supplemental DEIS were established (Figure 2).

3.4.1 Refinements of Alternatives

After the December 2011 Supplemental Alternatives Analysis, a series of meetings and outreach activities led to further refinement of the Bakersfield alternatives. The Authority and FRA, in cooperation with the affected stakeholders, developed a hybrid alternative alignment for the Bakersfield subsection to address substantive comments received during public and agency review of the Draft EIR/EIS. This hybrid alternative is a variation of the two Bakersfield subsection alternatives evaluated in the Draft EIR/EIS, with all three alternatives sharing corresponding termini and an HST station generally in the vicinity of Downtown Bakersfield, near the Amtrak station. The Bakersfield Hybrid Alternative, developed in early 2012, was carried forward into the environmental analysis in the Revised DEIR/Supplemental DEIS (Figure 2). More detailed information regarding the development of alternatives and why certain alternatives were dropped from consideration is presented in the Attachment.

Subsequent to publication of the Revised DIER/Supplemental DEIS, minor modifications were made to the Hanford West Bypass 2 Alternative (below grade) to avoid two potential uses of Section 4(f) properties.

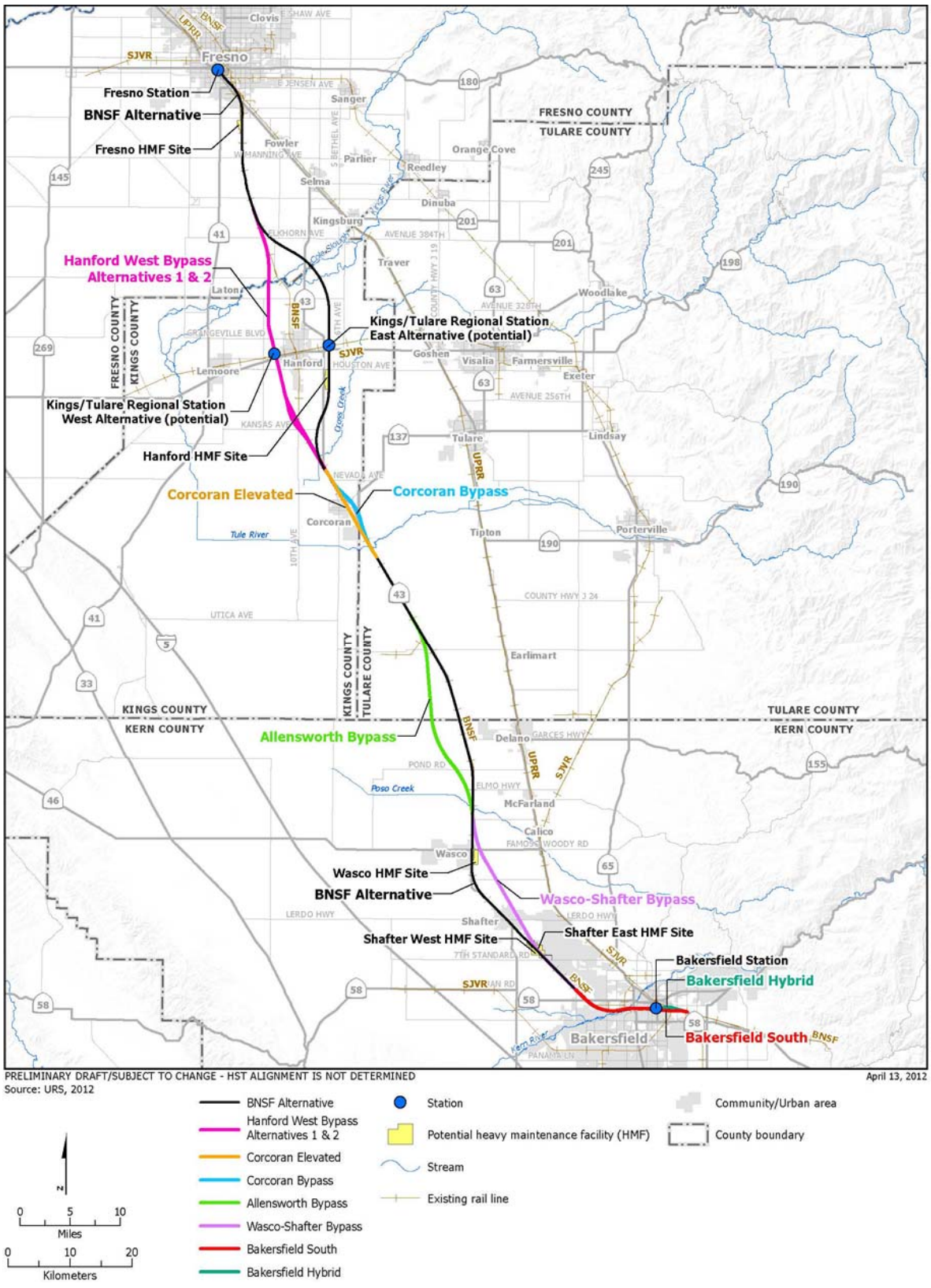

Figure 2
Fresno to Bakersfield Section Project Alternatives

CALIFORNIA High-Speed Rail Authority
U.S. Department of Transportation
Federal Railroad Administration

3.5 Alternatives Evaluation

3.5.1 Environmental Impacts

In recommending the Preferred Alternative, the Authority staff has balanced important environmental factors that differentiated the alternatives and continued to coordinate with and consider input from stakeholders. Generally, environmental issues identified are grouped into natural resources impacts, community impacts (including transportation infrastructure), and effects during construction. Tables 1 and 2 summarize impacts in each of these groupings, respectively. The color coding signifies a relative range of impacts that would be substantially higher (represented by red), average (yellow), or substantially lower (green). The color codes offered the resource specialist a method of integrating a professional, qualitative judgment with the quantity of impacts. For instance, when the quality of the resources affected varied more by habitat value than by acres, the color code reflects the value of impacts applied using professional judgment rather than only quantities.

This evaluation provides information on the environmental topics where the alternatives are substantively different and does not focus on resource topics where the potential impacts for the alternatives are substantially similar or were not significant, such as hydrology, air quality and global climate change, public utilities and energy, geology, soils and seismicity, hazardous materials and waste, safety and security, electromagnetic fields and interference, station planning, and archaeological and paleontological resources.

3.5.1.1 Natural Resources

Of all 72 possible combinations of HST alternatives, Table 1 demonstrates that the Preferred Alternative has one of the smallest impacts on natural resources, including high value resources (e.g., natural land, vernal pools, conservation areas, and wildlife movement corridors). A short summary describing the relative differences of natural resource impacts follows for each category of natural resources.

Special-Status Species. All alternatives would have a substantial effect on suitable habitat for special-status species. Effects would either be direct during site preparation and construction or indirect through runoff, noise, motion, startle, and ongoing facility operation. The degree of direct and indirect effects would be somewhat greater with the Preferred Alternative as it contains the most natural land that is suitable for a variety of special-status plant and wildlife species within the construction footprint. For annual grassland, impacts of the Preferred Alternative would be greater than the BNSF Alternative in the Hanford area but significantly less than the BNSF Alternative in the Allensworth area. For other natural habitats (i.e., valley foothill riparian, alkali desert scrub) and aquatic habitats, the Preferred Alternative would generally result in fewer acres of impact compared with corresponding alternatives.

Table 1
Natural Resources Impacts in the Fresno to Bakersfield Section

Parameter	Alternatives		Common Components[A]	Alternative Components															
				Hanford Area					Corcoran Area			Allensworth Area		Wasco-Shafter Area		Bakersfield Area			
	Potential Preferred Alternative	BNSF Alternative		BNSF-Hanford East[B]	HW Bypass 1 At Grade[B]	HW Bypass 1 Below Grade[B]	HW Bypass 2 At Grade[B]	HW Bypass 2 Below Grade[B]	BNSF - Through Corcoran	Corcoran Elevated	Corcoran Bypass	BNSF - Through Allensworth[B]	Allensworth Bypass[B]	BNSF - Through Wasco-Shafter	Wasco-Shafter Bypass	BNSF-Bakersfield North	Bakersfield South	Bakersfield Hybrid
Aquatic Resource Impacts -Direct and Indirect (acres)																		
◦Wetlands Impact (Waters of U.S.)	43.12	116.36	12.64	0.00	1.06	1.06	1.37	1.37	9.81	9.81	3.30	93.15	25.23	0.00	0.00	0.76	0.56	0.56
◦Other Waters of the U.S. Impact	337.90	347.38	37.03	43.73	49.49	41.08	57.43	49.02	43.26	45.76	41.80	145.67	154.56	30.22	18.28	47.47	37.14	37.22
◦Riparian Impacts	20.84	35.26	0.00	20.19	10.77	10.78	10.77	10.78	1.52	1.40	2.55	5.14	3.04	0.00	0.00	8.40	4.47	4.47
Total Impacts to Aquatic Resources (U.S., Riparian) (acres)	*401.86*	*499.00*	*49.67*	*63.93*	*61.32*	*52.92*	*69.57*	*61.17*	*54.60*	*56.97*	*47.65*	*243.95*	*182.83*	*30.22*	*18.28*	*56.63*	*42.18*	*42.25*
Hydrology, Hydromodification and Erosion and Accretion Patterns	46	42	11	15	21	21	21	21	3	4	4	4	2	0	0	9	8	8
Current Patterns and Water Circulation, Fluctuation, and Water Quality: Temp, Receiving Water Quality Standards	9.8	8.6	-	3.7	4.8	4.8	4.8	4.8	0.6	0.6	0.6	0.9	0.7	0	0	3.4	3.4	3.4
◦Flood Control Functions and Flood Fluctuations in Water Level	536	722	136	125	144	144	116	116	199	90	78	201	123	88	67	23	16	16
Natural Upland Habitats	331.97	294.9	53.87	2.66	61.01	64.88	67.83	71.7	22.28	24.76	41.48	142.37	93.53	21.43	19.97	52.3	51.53	51.42
Wildlife Movement Corridors[C]	Substantial	Substantial	Substantial	Moderate	Moderate	Moderate	Moderate	Moderate	Moderate	Mod-erate	Mod-erate	Sub-stantial	Sub-stantial	Small	Small	Small	Small	Small

[A] Common Components are portions of the alternative alignments that are shared and are common across all HST Alternatives. For example, the Pixley Section is common to all alternatives regardless of alternative ultimately selected. The quantities from this column must be included and combined with other alternatives to develop a single end to end HST alternative.

[B] The BNSF-Hanford East can be used in combination with either the BNSF-Through Corcoran, Corcoran Elevated or Corcoran Bypass Alternatives. Hanford West Bypass 1 (at grade or below grade) can only be used in combination with the BNSF-Through Corcoran Alternative. The Hanford West Bypass 2 (at grade or below grade) can only be used in combination with the Corcoran Elevated or Corcoran Bypass Alternatives. Calculations for Hanford Area Alternatives are largely dependent on connection to Corcoran Alternatives. Connection to Corcoran Bypass is assumed for all BNSF Hanford East and Hanford Bypass 2 Alternatives (Hanford Bypass 1 does not connect to Corcoran Bypass/Elevated). Calculations for Allensworth Alternatives are largely dependent on connection to Wasco-Shafter Alternatives. Connection to Wasco Shafter Bypass is assumed for all Alternatives.

[C] Although impacts to movement corridors are substantial for both the Through Allensworth and Allensworth Bypass, the Allensworth Bypass is preferable because the barrier to movement is not compounded by the existing BNSF and SR 43.

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Table 2
Comparison of Quantity of Impacts on Waters of the U.S. by Alternative

Waters of the U.S.	Impact Type[a]	High-Speed Train Alternatives										
		Preferred Alternative	BNSF–Hanford East	Hanford West Bypass 1 At-Grade Option	Hanford West Bypass 1 Below-Grade Option	Hanford West Bypass 2 At-Grade Option	BNSF–Through Corcoran	Corcoran Elevated	BNSF–Through Allensworth	BNSF–Through Wasco-Shafter	BNSF–Bakersfield North	Bakersfield South
		Impact Acreage / Difference Compared to Corresponding Preferred Alternative Area[b]										
WETLANDS TOTAL	**Direct-Permanent**	4.07	—	0.01 / +0.01	0.01 / +0.01	—	1.55 / -0.07	1.14 / -0.48	9.97 / +8.80	—	0.12 / +0.12	0.01 / +<0.01
	Direct-Temporary	0.67	—	—	—	—	—	—	0.16 / +0.16	—	—	—
	Indirect-Bisected	2.87	—	—	—	—	5.49 / +5.49	4.76 / +4.76	17.26 / +15.52	—	—	—
	Indirect	35.52	— / -1.37	1.05 / -0.33	1.05 / -0.33	1.37 / 0.00	2.77 / +1.09	3.92 / +2.23	65.76 / +43.44	—	0.63 / +0.08	0.55 / 0.00
Emergent wetland	Direct-Permanent	—	—	—	—	—	—	—	—	—	—	—
	Direct-Temporary	—	—	—	—	—	—	—	—	—	—	—
	Indirect	0.92	— / -0.92	0.59 / -0.33	0.59 / -0.33	0.92 / 0.00	—	—	—	—	<0.01 / +<0.01	— / -<0.01
Seasonal wetland	Direct-Permanent	1.20	—	0.01 / +0.01	0.01 / +0.01	—	<0.01 / -0.43	0.05 / -0.38	0.55 / +0.43	—	0.12 / +0.12	0.01 / 0.00
	Direct-Temporary	0.67	—	—	—	—	—	—	0.16 / +0.16	—	—	—
	Indirect	15.76	— / -0.45	0.45 / 0.00	0.45 / 0.00	0.45 / 0.00	2.18 / +2.06	2.14 / +2.01	33.44 / +22.69	—	0.63 / +0.08	0.55 / 0.00
Vernal pools and swales	Direct-Permanent	2.86	—	—	—	—	1.55 / +0.36	1.09 / -0.10	9.42 / +8.37	—	—	—
	Direct-Temporary	—	—	—	—	—	—	—	—	—	—	—
	Indirect-Bisected	2.87	—	—	—	—	5.49 / +5.49	4.76 / +4.76	17.26 / +15.52	—	—	—
	Indirect	18.83	—	—	—	—	0.59 / -0.97	1.78 / +0.22	32.33 / +20.75	—	—	—
OTHER WATERS OF THE U.S. TOTAL	**Direct-Permanent**	67.34	11.81 / +1.16	15.60 / +4.94	14.08 / +3.43	12.17 / +1.51	19.23 / +7.09	13.53 / +1.39	27.64 / +5.39	8.06 / +3.28	5.32 / -0.29	4.92 / -0.69
	Direct-Temporary	15.27	0.50 / -0.21	0.62 / -0.10	0.62 / -0.10	0.72 / 0.00	0.88 / -3.84	0.90 / -3.81	1.33 / -1.21	2.62 / +1.46	4.02 / +0.49	3.58 / +0.05
	Indirect	255.28	31.42 / -6.22	33.27 / -4.37	26.38 / -11.27	44.54 / +6.90	23.15 / -1.79	31.33 / +6.39	116.71 / -13.06	19.55 / +7.21	38.13 / +10.06	28.64 / +0.57
Canals/Ditches	Direct-Permanent	39.44	6.91 / -2.50	14.35 / +4.95	13.21 / +3.81	10.54 / +1.14	14.22 / +5.85	9.29 / +0.92	7.11 / +1.28	3.84 / +1.86	1.84 / -1.12	2.27 / -0.69
	Direct-Temporary	3.80	0.50 / +0.29	0.11 / -0.10	0.11 / -0.10	0.21 / 0.00	0.88 / -0.14	0.90 / -0.12	—	0.01 / -0.04	0.57 / -0.41	1.03 / +0.05
	Indirect	85.59	12.85 / -7.92	21.61 / +0.83	20.86 / +0.08	21.53 / +0.75	10.93 / -3.20	19.16 / +5.03	24.85 / +0.72	7.80 / +1.99	9.63 / -1.99	11.89 / +0.27
Lacustrine	Direct-Permanent	25.87	0.88 / +0.56	0.53 / +0.22	0.35 / +0.03	0.51 / +0.19	4.77 / +1.14	4.00 / +0.36	20.24 / +3.97	4.22 / +1.41	2.15 / +0.32	1.82 / 0.00
	Direct-Temporary	10.08	—	—	—	—	— / -3.55	— / -3.55	1.31 / -1.14	2.60 / +1.50	2.55 / +0.64	1.91 / 0.00
	Indirect	148.48	4.43 / -7.62	6.34 / -5.71	0.79 / -11.27	17.61 / +5.55	11.26 / +3.16	11.37 / +3.27	90.31 / -14.06	11.75 / +5.23	8.51 / +4.47	4.35 / +0.31
Seasonal riverine	Direct-Permanent	2.04	4.02 / +3.09	0.71 / -0.22	0.52 / -0.41	1.12 / +0.19	0.24 / +0.10	0.24 / +0.10	0.28 / +0.14	—	1.34 / +0.50	0.83 / 0.00
	Direct-Temporary	1.39	— / -0.50	0.50 / 0.00	0.50 / 0.00	0.50 / 0.00	— / -0.14	— / -0.14	0.02 / -0.08	—	0.90 / +0.26	0.65 / 0.00
	Indirect	21.21	14.14 / +9.32	5.32 / +0.51	4.74 / -0.08	5.40 / +0.59	0.97 / -1.75	0.80 / -1.92	1.55 / +0.28	—	19.98 / +7.58	12.40 / 0.00
TOTAL IMPACTS	**Direct-Permanent**	71.41	11.81 / +1.16	15.61 / +4.96	14.10 / +3.44	12.17 / +1.51	20.78 / +7.02	14.67 / +0.90	37.60 / +14.18	8.06 / +3.28	5.45 / -0.18	4.93 / -0.69
	Direct-Temporary	15.94	0.50 / -0.21	0.62 / -0.10	0.62 / -0.10	0.72 / +<0.01	0.88 / -3.84	0.90 / -3.81	1.49 / -1.06	2.62 / +1.46	4.02 / +0.49	3.58 / +0.05

Table 2
Comparison of Quantity of Impacts on Waters of the U.S. by Alternative

Waters of the U.S.	Impact Type[a]	High-Speed Train Alternatives										
		Preferred Alternative	BNSF–Hanford East	Hanford West Bypass 1 At-Grade Option	Hanford West Bypass 1 Below-Grade Option	Hanford West Bypass 2 At-Grade Option	BNSF–Through Corcoran	Corcoran Elevated	BNSF–Through Allensworth	BNSF–Through Wasco-Shafter	BNSF–Bakersfield North	Bakersfield South
		Impact Acreage / Difference Compared to Corresponding Preferred Alternative Area[b]										
	Indirect-Bisected	2.87	—	—	—	—	5.49 / +5.49	4.76 / +4.76	17.26 / +15.52	—	—	—
	Indirect	290.80	31.42 / -7.60	34.32 / -4.70	27.42 / -11.59	45.91 / +6.90	25.92 / -0.71	35.25 / +8.62	182.47 / +30.38	19.55 / +7.21	38.76 / +10.13	29.19 / +0.57

Notes:

— = No impact or not applicable

[a] Indirect impacts are calculated within a 250-foot buffer of the construction footprint, which includes areas of permanent and temporary impacts.

[b] The "Difference Compared to Corresponding Preferred Alternative Area" represents the difference in impact acreages between an alternative alignment and its corresponding segment in the Preferred Alternative: positive (+) differences indicate that the alternative alignment results in greater impact acres than its corresponding segment in the Preferred Alternative; negative (-) differences indicate that the alternative alignment results in fewer impact acres than its corresponding segment in the Preferred Alternative.

Impact calculations in this table include alignment alternatives and station alternatives, but do not include HMF alternatives.

All impacts were calculated based on 15% engineering design construction footprint.

Waters of the U.S. The alternatives all would have substantial impacts on waters of the U.S. (aquatic communities). The Preferred Alternative minimizes impacts on waters of the U.S. compared with other available HST alternatives. Furthermore, when considered in terms of quality, the Preferred Alternative substantially minimizes impacts on features in good condition, as well those in fair and poor condition compared with the other alternatives. The smaller amount of acreage impacted would mean less impact overall and thus requires less compensatory mitigation.

Wetlands. Wetlands are a category of waters of the U.S. and consist of vernal pools, seasonal wetlands, and emergent wetlands. Vernal pools and seasonal wetlands are complex, sensitive habitats and were identified in the detailed analysis of condition among the highest scoring (best quality) features in the entire study area. Indirect effects outside the construction footprint are caused by changes in local micro-watersheds, which maintain suitable inundation levels for the lifecycles of vernal pool fauna. Due to their inherent sensitivity, vernal pools are a challenge to mitigate and/or re-establish for their full functions and values. All alternatives would affect wetlands.

The BNSF Alternative directly and indirectly impacts the largest vernal pool acreages. The Preferred Alternative (mainly due to the Allensworth Bypass Alternative) contains far fewer direct vernal pool impacts (9 acres less than BNSF Alternative) and thus would have a more manageable mitigation/restoration requirement. The Preferred Alternative would indirectly impact far fewer vernal pool features (35 acres less) than the other alternatives. Direct impacts to seasonal wetlands are similar among all HST Alternatives; however, the Preferred Alternative has fewer indirect impacts through the selection of the Corcoran Bypass and Allensworth Bypass alternatives (2 and 23 acres, respectively) than the other Corcoran area alternatives and the BNSF Alternative in the Allensworth area. Emergent wetlands would only be indirectly impacted and these impacts would be relative small (<1 acre). Other Hanford area alternatives (Hanford East and Hanford West Bypass 1) would avoid or reduce indirect impacts to emergent wetlands as compared to the Preferred Alternative.

An evaluation of the condition of wetlands and other waters of the U.S (as it relates to functions and values) showed that agricultural activities reduce the condition of almost all aquatic resources within the wetland study area; however, vernal pools and seasonal riverine features score average to above average with respect to condition. Regardless of alternative, impacts to seasonal riverine features are similar, and differences among vernal pool impacts are restricted to the alternatives in the vicinity of Allensworth. Thus, there would be less overall reduction of the quantity and quality of vernal pools for the Preferred Alternative when compared against all of the other HST alternatives.

Riparian Habitat. Riparian communities include narrow bands of "valley and foothill" riparian vegetation adjacent to seasonal riverine features found throughout the study area. These plant communities include all vegetated portions of the channel from the median high-water mark to the outer edges of the watercourses. Riparian habitat is frequently used as linear dispersal corridors that funnel wildlife movement through an otherwise fragmented landscape. Because these features are oriented in an east-west fashion and the project has a north-south orientation, all HST alternatives are required to cross the drainages and the associated riparian communities. The range of acreages representative of the direct and indirect effect is similar through all HST alternatives. However, the Preferred Alternative has two advantages: direct-permanent impacts are reduced by approximately 1.5 acres as compared to the BNSF Alternative in the Hanford area and indirect impacts are reduced by 4 acres as compared to the BNSF Alternative in the Bakersfield area.

Conservation Areas. The Preferred Alternative would not adversely impact conservation areas. However, the BNSF Alternative in Allensworth would have some significant impacts on

Allensworth Ecological Reserve**.** The BNSF Alternative in the Allensworth area would parallel the BNSF track and SR43 and impact Allensworth Ecological Reserve, whereas the Preferred Alternative in this area would occur well west of this conservation area. The Allensworth Ecological Reserve is managed by the California Department of Fish and Wildlife and provides habitat for a number of special-status plant and wildlife species including the San Joaquin kit fox, blunt-nosed leopard lizard, Tipton kangaroo rat, western burrowing owl, Swainson's hawk, and vernal pool fairy shrimp. Project impacts on the ecological reserve would require extensive mitigation and agency negotiations to offset direct and indirect effects. By avoiding impacts to this conservation area, the Preferred Alternative would significantly reduce mitigation requirements.

Each of the alternatives would occur within the Metropolitan Bakersfield Habitat Conservation Plan; however, these impacts are less than significant and do not affect targeted conservation areas.

Wildlife Corridors. Although all HST alternatives would present a barrier to wildlife crossing, the project incorporates a number of engineering design features to provide permeability to wildlife, including the installation of dedicated wildlife movement structures. The existing landscape has been fragmented through urban, transportation, and agriculture land uses that significantly restrict wildlife movement; however, several movement linkages have been identified including areas along the Kings River complex, Cross Creek, Deer Creek, Sand Ridge (Allensworth area), Poso Creek, and the Kern River. Because the project design is similar across most of the rivers and creeks where wildlife movement occurs, the impacts are similar among HST alternatives. However, the Preferred Alternative in the Allensworth area would create a new restriction to wildlife movement in the Sand Ridge area. The Preferred Alternative has some slight advantages over the BNSF Alternative in the Allensworth area in that while it would create a new barrier, it would not have the compounding effects that are associated with the BNSF Alternative. These compounding effects occur because not only would the alternative create a new barrier but it would also be constructed adjacent to the existing barriers associated with the BNSF tracks and SR 43. Wildlife crossing opportunities are provided through the use of viaducts, bridges, road over and under crossings, drainage facilities (large culverts), and dedicated wildlife movement structures.

3.5.2 Section 4(f) Uses

Section 4(f) of the Department of Transportation Act (49 U.S.C. 303) provides special protection to publicly-owned public parks, recreational areas of national, state or local significance, wildlife or waterfowl refuges, and lands from a historic site of national, state or local significance. Section 4(f) properties can only be used for federal-funded transportation projects if there is no feasible and prudent alternative and all possible planning has been taken to avoid the use of a 4(f) property or to minimize harm to any 4(f) property affected by the project. All alternatives cross three historic irrigation canals in southern Fresno County that cannot be avoided by feasible and prudent alternatives. None of the alternatives in the Corcoran and Wasco-Shafter areas use 4(f) properties. The Hanford West Bypass 1 Alternative uses two 4(f) properties: an historic irrigation canal and an historic ranch complex. The BNSF Alternative in the Hanford area and the Hanford West Bypass 2 Alternative each use an historic canal that cannot be avoided by feasible and prudent alternatives. The BNSF Alternative in the Allensworth area uses two 4(f) properties: Colonel Allensworth State Historic Park and Allensworth Ecological Reserve. The Allensworth Bypass Alternative avoids both of these properties. The Bakersfield South Alternative would use an historic farmstead. The Preferred Alternative would result in the use of four Section 4(f) resources, whereas the BNSF Alternative would result in the use of six Section 4(f) resources, including both parks and historic resources.

3.5.3 Community Resources and Land Use

Community Effects. As shown on Table 3, the Preferred Alternative would result in a lower level of community impacts than the BNSF Alternative. The Preferred Alternative would be 3 miles shorter than the BNSF Alternative. The BNSF Alternative would result in more total displacements than the Preferred Alternative, including the loss of key community facilities such as the Fresno Rescue Mission/Homeless Shelter, the Amtrak Station-Corcoran, the Bakersfield High School Industrial Arts Building, Bethel Christian School property, and an additional 395 businesses (13% more) and 451 housing units (32% more) as compared to the Preferred Alternative. The significantly higher numbers of displacements associated with the BNSF Alternative are primarily because this alignment would traverse the urban, developed areas of Corcoran, Wasco, and Shafter. The Preferred Alternative would partially displace or impact two religious facilities and displace an additional one religious facility while the BNSF Alternative would partially displace or impact two religious facilities and displace an additional four religious facilities. The Bakersfield Hybrid Alternative (part of the Preferred Alternative) was specifically designed to reduce impacts on religious facilities based on community input.

Except for Fresno with a single alternative and Bakersfield with three through-town alternatives, differentiators among the alternatives are related to effects on the communities of Hanford, Corcoran, Allensworth, Wasco, and Shafter. In Hanford, the Preferred Alternative (Hanford West Bypass 2 Alternative, Below-Grade Option) would lie immediately west of the city, avoiding most Important Farmlands, all but four confined animal facilities (as compared to 15 confined animal facilities under the BNSF Alternative in the Hanford area), and an established community east of Hanford. It would also provide an HST station site very near the city of Hanford, Amtrak, and SR 43, enhancing connectivity and encouraging growth where Hanford is planning for it. These benefits are also the reason why the Preferred Alternative and the Hanford West Bypass 1 Alternative would have more noise and displacement impacts than the BNSF Alternative east of Hanford. The station for the BNSF Alternative would be located outside the sphere of influence for the city of Hanford on land currently used for agriculture. While the station site for the BNSF Alternative is zoned for light industrial uses, neither the city of Hanford or Kings County has plans for the use of station site or surrounding lands other than agricultural production. In Corcoran, Allensworth, Wasco, and Shafter, the Preferred Alternative incorporates bypass alternatives, avoiding substantial displacement and environmental justice impacts, and still having fewer impacts on Important Farmlands than the BNSF Alternative. Finally, the Preferred Alternative in the Bakersfield area (Bakersfield Hybrid Alternative) was developed to combine the best of the BNSF Alternative and the Bakersfield South Alternative, with community input after review of the Draft EIR/EIS. A short summary describing the relative differences in operation and construction community impacts follows for each category of community resource.

Property acquisition of residential units would be fewer for the Preferred Alternative (325 units) than for the BNSF Alternative (451 units), and likewise property acquisition of commercial and industrial units would be fewer for the Preferred Alternative (342 units) than for the BNSF Alternative (395 units).

Transportation. All HST alternatives would result in transportation impacts to roadways and intersections which would be affected by project-related traffic, either from the addition of station-generated traffic and/or from the diverted traffic near proposed road closures. These impacts would be most apparent in Fresno where the alignment is at-grade, requiring the modification of the local roadway network. Transportation impacts in Bakersfield would be associated primarily with station-generated traffic because the trackway would be elevated and there would be few modifications to the local roadway network. The Preferred Alternative and the BNSF Alternative would both provide a benefit to the city of Fresno by providing new grade-separated roadway crossings over the existing BNSF Railway. The new crossings would span the

BNSF right-of-way and HST, and would improve circulation for portions of the downtown community.

The Preferred Alternative would require fewer modifications to the state highway system than would the BNSF Alternative. The Preferred Alternative would require more local road closures than the BNSF Alternative, but would have fewer urban road closures. The road closures would mostly affect rural areas with other available roadway options to meet circulation demands and with less possibility of congestion. The BNSF Alternative road closures, although fewer in number, include more roadways in the urbanized areas and therefore may result in higher community effects.

Many of the anticipated impacts are similar among the alternatives because they would occur in association with the Fresno, Kings/Tulare Regional, and Bakersfield station sites, which are common elements in the project alternatives. Significant impacts on roadways and intersections are anticipated in the vicinity of the Fresno, Kings/Tulare Regional, and Bakersfield stations. Significant roadway impacts specific to the BNSF Alternative have also been identified in the city of Corcoran. These impacts would be would be caused either by the addition of station-generated traffic and/or by diverted traffic near proposed road closures. With application of mitigation measures, the project transportation impacts would be reduced to a level less-than-significant.

Noise. All HST alternatives would have noise impacts. Impacts from noise are expected to occur throughout the alignment, with both urban and rural residences expected to experience significant noise impacts. The Preferred Alternative would impact 2,031 sensitive receivers (residences, churches, schools, hospitals, parks, and historic properties) before mitigation. This number is much lower than the 4,484 receivers who would experience impacts from the BNSF Alternative, because the BNSF Alternative goes through more urban areas than the Preferred Alternative. With implementation of sound walls, the Preferred Alternative would severely impact 612 noise receivers, which is fewer than the 866 severely impacted noise receivers for the BNSF Alternative after mitigation.

The Preferred Alternative in the Hanford area (Hanford West Bypass 2, Below-Grade Option) would impact the most noise sensitive receivers of all the Hanford area alternatives. In Corcoran, the BNSF and Corcoran Elevated alternatives would impact more receivers before mitigation, but after the implementation of sound walls, the Preferred Alternative (Corcoran Bypass Alternative) would have the greatest impacts because mitigation in agricultural areas would not be effective or would be extremely costly. The Preferred Alternative in the Allensworth area (Allensworth Bypass Alternative) would have no impacts on noise sensitive receivers whereas the BNSF Alternative would. The Preferred Alternative in the Wasco-Shafter area (Wasco-Shafter Bypass Alternative) would affect fewer sensitive receivers than the BNSF Alternative. In Bakersfield, both the Preferred Alternative (Bakersfield Hybrid Alternative) and the Bakersfield South Alternative would impact the same number of receivers, with the BNSF Alternative impacting the fewest number of receivers.

Table 3
Community Resource Impacts in the Fresno to Bakersfield Section

Parameter	Alternatives		Common Components[A]	Alternative Components															
				Hanford Area					Corcoran Area			Allensworth Area		Wasco-Shafter Area		Bakersfield Area		
	Potential Preferred Alternative	BNSF Alternative		BNSF-Hanford East[B]	HW Bypass 1 At Grade[B]	HW Bypass 1 Below Grade[B]	HW Bypass 2 At Grade[B]	HW Bypass 2 Below Grade[B]	BNSF - Through Corcoran	Corcoran Elevated	Corcoran Bypass	BNSF - Through Allensworth[B]	Allensworth Bypass[B]	BNSF - Through Wasco-Shafter	Wasco-Shafter Bypass	BNSF-Bakersfield North	Bakersfield South	Bakersfield Hybrid
Transportation & Traffic (permanent road closures)	32	19	10	5	4	4	4	4	2	1	4	2	3	0	11	0	0	0
Noise & Vibration –sensitive receptors affected (before)/after mitigation	(2,031) 612	(4,484) 866	(86) 86	(178) 178	(232) 232	(231) 231	(252) 252	(287) 287	(422) 79	(453) 27	(111) 111	(14) 14	(0) 0	(1,168) 531	(67) 63	(2,616) 10	(3,038) 61	(1,480) 61
Important Farmland (acres)	2661	3,102	615	1,075	842	853	798	809	260	106	184	468	386	683	667	0	0	0
Prime Farmland (acres)	1416.70	1,602	303	394	369	378	364	373	4	0	0	219	74	682	667	0	0	0
Williamson Act Lands (acres)	815.41	1,625	189	582	163	166	94	96	233	79	80	257	203	364	247	0	0	0
Confined animal facilities affected	8	19	1	15	6	6	4	4	3	3	3	0	0	0	0	0	0	0
Parks, Recreation, Open Space	3	5	0	0	0	0	0	0	0	0	0	1	0	0	0	4	3	3
Visual Quality in Rural Areas affected	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	No	No	Yes	Yes	Yes	No	Yes	No	No	No
Visual Quality in Urban Areas affected	Yes	Yes	Yes	No	No	No	No	No	Yes	Yes	No	Yes	No	Yes	No	Yes	Yes	Yes
Cultural Resources & Built Environment – direct/indirect	6/16	7/15	4/10	1/1	2/2	2/2	1/2	1/2	0/0	0/0	0/0	1/0	0/0	0/2	0/0	1/2	1/1	1/5
Key Community Facilities affected	7	8	2	1	0	0	0	0	3	1	0	0	0	0	0	2	4	5
Displacement of religious facilities (parcel affected)	2(2)	5(2)	0(0)	0(0)	0(0)	0(0)	0(0)	0(0)	0(0)	0(0)	0(0)	0(0)	0(0)	1(0)	1(0)	4(2)	4(1)	1(2)
Divides community of Ponderosa Road/Edna Way	No	Yes	No	Yes	No	No	No	No	No	No	No	No	No	No	No	No	No	No
Divides community in Newark Ave. and 5th Ave./Waukena-Corcoran	Yes	No	No	No	No	No	No	No	No	No	Yes	No	No	No	No	No	No	No
Disproportionate effects on EJ communities	Yes	Yes	Yes	No	No	No	No	No	Yes	Yes	Yes	Yes	No	Yes	No	Yes	Yes	Yes
Estimated no. of commercial and industrial bus. displaced	342	395	51	3	7	7	7	7	16	1	0	0	0	23	4	302	135	280
Estimated no. of housing units displaced	325	451	40	62	53	52	51	50	52	3	31	9	0	23	18	265	272	186

[A] Common Components are portions of the alternative alignments that are shared and are common across all HST Alternatives. For example, the Pixley Section is common to all alternatives regardless of alternative ultimately selected. The quantities from this column must be included and combined with other alternatives to develop a single end to end HST alternative.

[B] The BNSF-Hanford East can be used in combination with either the BNSF-Through Corcoran, Corcoran Elevated or Corcoran Bypass Alternatives. Hanford West Bypass 1 (at grade or below grade) can only be used in combination with the BNSF-Through Corcoran Alternative. The Hanford West Bypass 2 (at grade or below grade) can only be used in combination with the Corcoran Elevated or Corcoran Bypass Alternatives. Calculations for Hanford Area Alternatives are largely dependent on connection to Corcoran Alternatives. Connection to Corcoran Bypass is assumed for all BNSF Hanford East and Hanford Bypass 2 Alternatives (Hanford Bypass 1 does not connect to Corcoran Bypass/Elevated). Calculations for Allensworth Alternatives are largely dependent on connection to Wasco-Shafter Alternatives. Connection to Wasco Shafter Bypass is assumed for all Alternatives.

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Agricultural Land Conversion. All alternatives would have significant impacts on agricultural land that cannot be mitigated to a level less-than-significant. Alternatives that do not follow an existing transportation corridor would sever more farm and ranch parcels than alternatives that closely follow existing transportation corridors.

The Preferred Alternative would require crossing and potentially severing fewer farmlands and dairies than the BNSF Alternative. The Preferred Alternative would convert 2,661 acres of Important Farmland and 815 acres of Williamson Act lands to non-agricultural uses, would have moderate effects on 3 confined animal facilities, and negligible effects on 5 such facilities. The BNSF Alternative would convert 3,102 acres of Important Farmland and 1,625 acres of Williamson Act lands, would have moderate effects on 8 confined animal facilities, and negligible effects on 11 such facilities.

The BNSF Alternative in Hanford would permanently convert more acres of Important Farmland and Williamson Act lands than the Preferred Alternative (Hanford West Bypass 2 Alternative, Below-Grade Option) or the Hanford West Bypass 1 Alternative, while also impacting a greater number of confined animal facilities. The Preferred Alternative in the Corcoran area (Corcoran Bypass Alternative) would permanently impact more Important Farmland and Williamson Act lands than the Corcoran Elevated Alternative, and less Important Farmland and Williamson Act lands than the BNSF Alternative. The Preferred Alternative in the Allensworth area (Allensworth Bypass Alternative) would permanently convert more Important Farmland and Williamson Act lands than the BNSF Alternative. The Preferred Alternative in the Wasco-Shafter area (Wasco-Shafter Bypass Alternative) would permanently impact fewer Important Farmland and Williamson Act lands than the BNSF Alternative. However, stakeholders in this area continue to provide information that the Authority staff wishes to evaluate to determine the appropriate HST alignment in the Wasco-Shafter area. There are no Important Farmlands or Williamson Act lands in the Bakersfield area.

Parks. All HST alternatives would affect park resources. Both the Preferred Alternative and BNSF Alternative would have temporary construction effects on parks, recreation, and open space, such as noise, dust, vibration, and visual degradation. The construction activities would be temporary, creating impacts for the duration of up to 4 years. The Preferred Alternative would affect fewer parks, recreational, and open-space areas than the BNSF Alternative. The Preferred Alternative would affect three recreation areas, all in Bakersfield: Kern River Parkway, Mill Creek Linear Park, and Bakersfield Amtrak Station Playground. In contrast, the BNSF Alternative would affect five recreation areas: Allensworth State Historic Park (with parkland acquisition and with the introduction of a modern feature into the historic atmosphere of the park) and Allensworth Ecological Reserve; Kern River Parkway; Mill Creek Linear Park; Bakersfield Amtrak Station Playground; and Bakersfield High School. No other parks, recreation, or open space would be permanently affected by any of the other alternatives.

Visual Resources. Visual resources, such as viewsheds and aesthetic corridors, cross over both urban and rural landscapes. Visual resources, such as vistas and aesthetic corridors, exist in both urban and rural landscapes. Significant impacts on vistas and aesthetic corridors are primarily expected to result from the vertical elements of the HST alternatives, particularly when elevated, because those vertical segments will block views of visual resources and change the landscape character. All alternatives could cause visual intrusion and potential blocking of views from the use of sound barriers where these are required, usually in urban areas. Because more of the BNSF Alternative traverses urban areas than the Preferred Alternative, the BNSF Alternative would result in a greater impact related to sound barriers.

The Preferred Alternative would result in the least impact on visual quality of aesthetic features and corridors; it would decrease the visual quality in five landscape units whereas the BNSF Alternative would decrease the visual quality in six landscape units. In a portion of the San

Joaquin Valley Rural Agricultural Landscape Unit, the Preferred Alternative would have less impact than the BNSF Alternative. In a portion of the Small Town Landscape Unit, the Preferred Alternative would have substantially less impact than the BNSF Alternative. Additionally, as proposed, the Preferred Alternative would have the least-elevated track, and thus would disrupt views less than would the BNSF Alternative.

Cultural Resources. All HST alternatives would affect cultural resources. The Preferred Alternative would directly affect 6 Section 106 historic properties and the BNSF Alternative would directly affect 7 Section 106 historic properties. The Preferred Alternative would indirectly affect an additional 17 such properties while the BNSF Alternative would indirectly affect an additional 15 such properties. The Preferred Alternative and the BNSF Alternative would each directly affect 2 CEQA-only historic resources. The Preferred Alternative would indirectly affect an additional 10 such resources while the BNSF Alternative would indirectly affect an additional 6 such resources.

3.5.3.1 Community Impacts by Individual Geographic Alternative

Hanford. In the Hanford area, the Preferred Alternative (modified Hanford West Bypass 2 Alternative, Below-Grade Option) would have severe noise impacts on more receptors than the BNSF Alternative; impact fewer acres on Important Farmlands and Williamson Act lands; and fewer impacts on confined animal facilities. The Preferred Alternative would not affect any key community facilities or churches, or divide established communities in the Hanford area, while the BNSF Alternative would displace Baker Commodities, an animal rendering plant critical to the dairy business in the region, and divide the community at Ponderosa Road and Edna Way. There would be slightly fewer residential displacements and slightly more commercial displacements under the Preferred Alternative than under the BNSF Alternative.

The Preferred Alternative in the Hanford area would directly affect one historic property and indirectly affect two historic properties, while the Hanford West Bypass 1 Alternative would directly affect two historic properties and indirectly affect another two. The BNSF Alternative in the Hanford area would directly affect one historic property and indirectly affect another. The Preferred Alternative would use two Section 4(f) properties, while the BNSF Alternative would use one Section 4(f) property; however, the FRA determined that the Preferred Alternative would have the least harm to 4(f) properties.

Corcoran. In the Corcoran area, the Preferred Alternative (Corcoran Bypass) would have severe noise impacts on more receptors than the BNSF Alternative or the Corcoran Elevated Alternative; fewer impacts on Important Farmlands and Williamson Act lands than the BNSF Alternative; and greater impacts on Important Farmlands and Williamson Act lands than the Corcoran Elevated Alternative. Similar to the Corcoran Elevated Alternative, the Preferred Alternative would have fewer impacts on confined animal facilities than would the BNSF Alternative. No key community facilities or churches would be affected under the Preferred Alternative, unlike the BNSF and Corcoran Elevated alternatives. The Preferred Alternative may divide and affect the small, unincorporated, rural residential community in the vicinity of Newark Avenue, between SR 43 and the irrigation canal, as well as the smaller enclave of rural residential homes in the vicinity of 5th Avenue and Waukena Avenue. The Preferred Alternative is the only Corcoran alternative that would not affect an environmental justice community. The Preferred Alternative would have fewer residential and commercial/industrial displacements than the BNSF Alternative in the Corcoran area, and more than the Corcoran Elevated Alternative. No Section 4(f) properties would be used under any of the Corcoran alternatives.

Allensworth. In the Allensworth area, the Preferred Allensworth Alternative (Allensworth Bypass Alternative) would have no severe impacts on noise receptors following mitigation, unlike the BNSF Alternative. The Preferred Alternative would affect fewer acres of Important Farmlands and Williamson Act lands. No confined animal facilities, key community facilities, or churches would

be affected by either alternative. Unlike the BNSF Alternative, the Preferred Alternative in the Allensworth area would not affect an environmental justice community. No residential displacements would occur under the Preferred Alternative; 9 would occur under the BNSF Alternative; no commercial displacements would occur under either alternative. No Section 4(f) properties would be used under the Preferred Alternative, while there would be a use of two Section 4(f) properties under the BNSF Alternative. One historic property would also be affected by the BNSF Alternative in the Allensworth area.

Wasco-Shafter. In the Wasco-Shafter area, the Wasco-Shafter Bypass Alternative would have severe noise impacts following mitigation on substantially fewer receptors than the BNSF Alternative. The Wasco-Shafter Bypass Alternative would affect fewer acres of Important Farmlands and Williamson Act lands. No confined animal facilities, key community facilities, or churches would be affected by either alternative. Unlike the BNSF Alternative, the Wasco-Shafter Bypass Alternative would not affect an environmental justice community. There would be fewer residential and commercial/industrial displacements under the Preferred Alternative. No Section 4(f) properties would be used under either of the alternatives in the Wasco-Shafter area.

Bakersfield. In the Bakersfield area, the Preferred Alternative (Bakersfield Hybrid Alternative) would have similar severe noise impacts following mitigation as the Bakersfield South Alternative and more than the BNSF Alternative. None of the Bakersfield alternatives would impact Important Farmlands, Williamson Act or confined animal facilities. The Preferred Alternative would displace more key community facilities but fewer churches than the other alternatives in Bakersfield. No community division would occur under any of the Bakersfield alternatives, and all alternatives would affect environmental justice communities. The Preferred Alternative would have the fewest residential displacements of all Bakersfield alternatives, fewer commercial/industrial displacements than the BNSF Alternative, and more commercial/industrial displacements than the Bakersfield South Alternative. The Preferred Alternative and the BNSF Alternative would not use any Section 4(f) properties, while the Bakersfield South Alternative would use one Section 4(f) property; avoidance of the Section 4(f) property at 2905 California Street was explored but was determined to have greater environmental effects. The Preferred Alternative would be approximately 1 minute slower than the BNSF and Bakersfield South alternatives, plus an additional minute that would be required for the Bakersfield to Palmdale HST Section. This is outweighed by fewer Section 4(f) uses than the Bakersfield South Alternative and reduced community impacts. The Preferred Alternative was derived from input received from the community in response to the information in the Draft EIR/EIS and Revised DEIR/Supplemental DEIS, especially related to avoidance of churches in Bakersfield.

The city of Bakersfield and Kern County have been the most involved jurisdictions in identifying a Preferred Alternative in Bakersfield. The Authority and FRA began coordinating with the city of Bakersfield and Kern County on alternative alignments through the Bakersfield metropolitan area during the initial engineering and environmental studies for the California HST System in the late 1990s. In coordination with a local task force, the Authority identified 7 potential station sites in the urban and suburban areas of metropolitan Bakersfield along with 4 potential alignment alternatives. This analysis is presented in the *Sacramento to Bakersfield High-Speed Train Alignments/Stations Screening Evaluation* (Frederic R. Harris, Inc. 2001).

In coordination with the alignment and station alternatives screening that the Authority was conducting, the Kern Council of Governments (COG) commissioned its own study, the High Speed Rail Terminal Impact Analysis (Kern COG 2003), to determine a community-preferred site for Bakersfield's future high speed rail station. The Authority identified three sites within metropolitan Bakersfield in its screening studies: Meadows Field vicinity, Golden State/"M" Street, and Truxtun/"S" Street. The Kern COG commissioned their study to recommend a locally preferred station site to be forwarded to the Authority. The Kern COG study was not intended to include final station design concepts or cite specific environmental impacts, but rather as a tool

for the Authority to understand the Bakersfield community's concerns as well as to explain potential partnering opportunities. The study evaluated the sites for concerns regarding mobility, access and intermodal connectivity, cost, user convenience, impact on the built environment (business and residential relocations), air quality, economic development, and environmental impacts. A series of outreach meetings was undertaken by the Kern COG in order to compile and understand various objectives and preferences for a station site. This study considered a 2- and 4-track alignment for the high-speed train and recognized that the HST could not occupy the BNSF Railway right-of-way and would have a right-of-way about 100 feet wide.

On July 1, 2003, the Kern County Board of Supervisors adopted Resolution 2003-290 in support of the Truxtun Avenue terminal site. On July 9, 2003, the Bakersfield City Council voted to adopt Resolution 118-03 endorsing the Truxtun Avenue site as their preferred site. On September 18, 2003, Kern Council of Governments adopted Resolution 03-23 to designate the Truxtun Avenue terminal site as "the preferred base system local alternative site for the Metropolitan Bakersfield high-speed rail terminal."

In a comment letter of August 18, 2004, on the Statewide Program Draft EIR/EIS for the California HST System, the Director of the Kern County Community and Economic Development Department stated:

> The Kern County Board of Supervisors and the Bakersfield City Council unanimously approved a preferred station location in downtown Bakersfield in the vicinity of the current Amtrak station ("Truxtun Station"). An extensive study was commissioned by the Kern Council of Governments to assist in determining a preferred station location. This location was also adopted by the Board of the Kern Council of Governments, which is made up of representatives from the County and all incorporated cities within the County.
>
> Between Sacramento and Bakersfield, the County of Kern has no preferred rail alignment. Either the Union Pacific Railroad (UPRR) or the Burlington Northern-Santa Fe (BNSF) alignments are acceptable as long as they support the Truxtun Station location site.

Based on the extensive planning studies done by Kern COG and supported by the city of Bakersfield and Kern County, the Record of Decision (ROD) for the Statewide Program EIR/EIS for the California HST System (Authority and FRA 2005), identified the Truxtun Station as the preferred HST station location in Bakersfield.

The Draft EIR/EIS evaluated two alternatives through Bakersfield, both with stations at Truxtun Avenue: the BNSF Alternative (or Bakersfield North) and the Bakersfield South Alternative. Among other impacts to community facilities and commercial and residential properties, the BNSF Alternative would impact a portion of the Bakersfield High School campus and the Bakersfield South Alternative would require relocation of the city's corporate yard. Upon understanding these impacts and the cost of project construction, the city of Bakersfield did not feel they could continue to support the project and passed a resolution opposed to the high-speed train on December 14, 2011.

In an effort to minimize impacts to the city of Bakersfield, the Authority developed a third alternative alignment through the city that was evaluated in the Revised DEIR/Supplemental DEIS. That alternative avoided impacts to Bakersfield High School but continued to impact the city's Corporate Yard, as well as community facilities and commercial and residential properties. This alternative did not resolve the community impact issues of the city of Bakersfield and the Authority continues to work with the city of Bakersfield to address their concerns.

3.5.4 Capital Costs

The Preferred Alternative is estimated to cost approximately $6.830 billion (in 2010 dollars). The Preferred Alternative would have substantially lower capital costs than the BNSF Alternative or any other combination of alternatives, with the exception of an alignment that includes all the elements of the Preferred Alternative north of Bakersfield and the Bakersfield South Alternative, which would have similar costs. The estimated cost of the Preferred Alternative is about $800 million less than the BNSF Alternative. Overall, in balancing the effects on the natural and community resources, the Preferred Alternative is the least expensive, minimizes environmental impacts the most, and has the least constructability issues. This is because this alternative is shorter, has less elevated guideway, and fewer environmental impacts than the BNSF Alternative.

3.5.5 Constructability Issues

The Preferred Alternative would be more favorable than the BNSF Alternative in terms of constructability. The Preferred Alternative would be shorter in total track length, and would have fewer linear miles of urban and elevated guideway, and fewer roadway overcrossings. As a result, planning and design complexities would be fewer; construction processes would be less complex; less concrete, construction materials, and equipment would be needed to implement the alternative; and the construction period for the alternative would be shorter. Consequently, construction phase impacts, including impacts on air quality, noise, transportation and transport, and parks would be less significant for the Preferred Alternative than for the BNSF Alternative.

3.5.6 Ridership and Revenue/Travel Times/Travel Conditions

The Authority and FRA have not identified relative differences with regard to other HST System criteria. For example, all alternatives are expected to generate equal ridership, equally connect to other modes of transportation, and provide for logical expansion of the HST System. The optimal express train travel time between Fresno and Bakersfield is 37 minutes. The Preferred Alternative would take 33 minutes and 16 seconds to travel between Fresno and Bakersfield, 12 seconds more than the BNSF Alternative, and it would add an additional minute to the Bakersfield to Palmdale Section due to the geometric curves in the Bakersfield Hybrid portion of the alignment. The HST would operate at high speeds (up to 220 miles per hour) throughout the Fresno to Bakersfield Section except in Bakersfield. The Preferred Alternative (Bakersfield Hybrid) would operate at a speed of 120 miles per hour through Bakersfield. While the Preferred Alternative would require reduced speeds through Bakersfield, it provides the advantage of avoiding the Bakersfield High School campus, and reduces the number of religious facilities and homes impacted in east Bakersfield. Even at this slower speed in Bakersfield, the Preferred Alternative would operate well within the optimal express train travel time for the Fresno to Bakersfield Section.

3.6 Station Locations

3.6.1 Fresno Station – Preferred Alternative

The Fresno Station–Mariposa Alternative (approved by the Board as part of the Merced to Fresno environmental process) is located in Downtown Fresno, less than 0.5 mile east of SR 99 (see Figure 3). The station would be centered on Mariposa Street and bordered by Fresno Street on the north, Tulare Street on the south, H Street on the east, and G Street on the west. Landmarks in the vicinity of the station include the Fulton Mall and Chukchansi Park to the east and Historic Chinatown to the west. The majority of station facilities would be located east of the UPRR tracks. The station site includes the station, bus transit center, surface parking lots, and kiss-and-ride accommodations. A new intermodal facility would be included in the station footprint. Among

other uses, the intermodal facility would accommodate the Greyhound facilities and services that would be relocated and integrated into the site plan. The site proposal includes the potential for up to three parking structures and surface parking with a capacity of approximately 4,800 cars. The city of Fresno has included this HST station site into their planning for the Fulton Mall corridor.

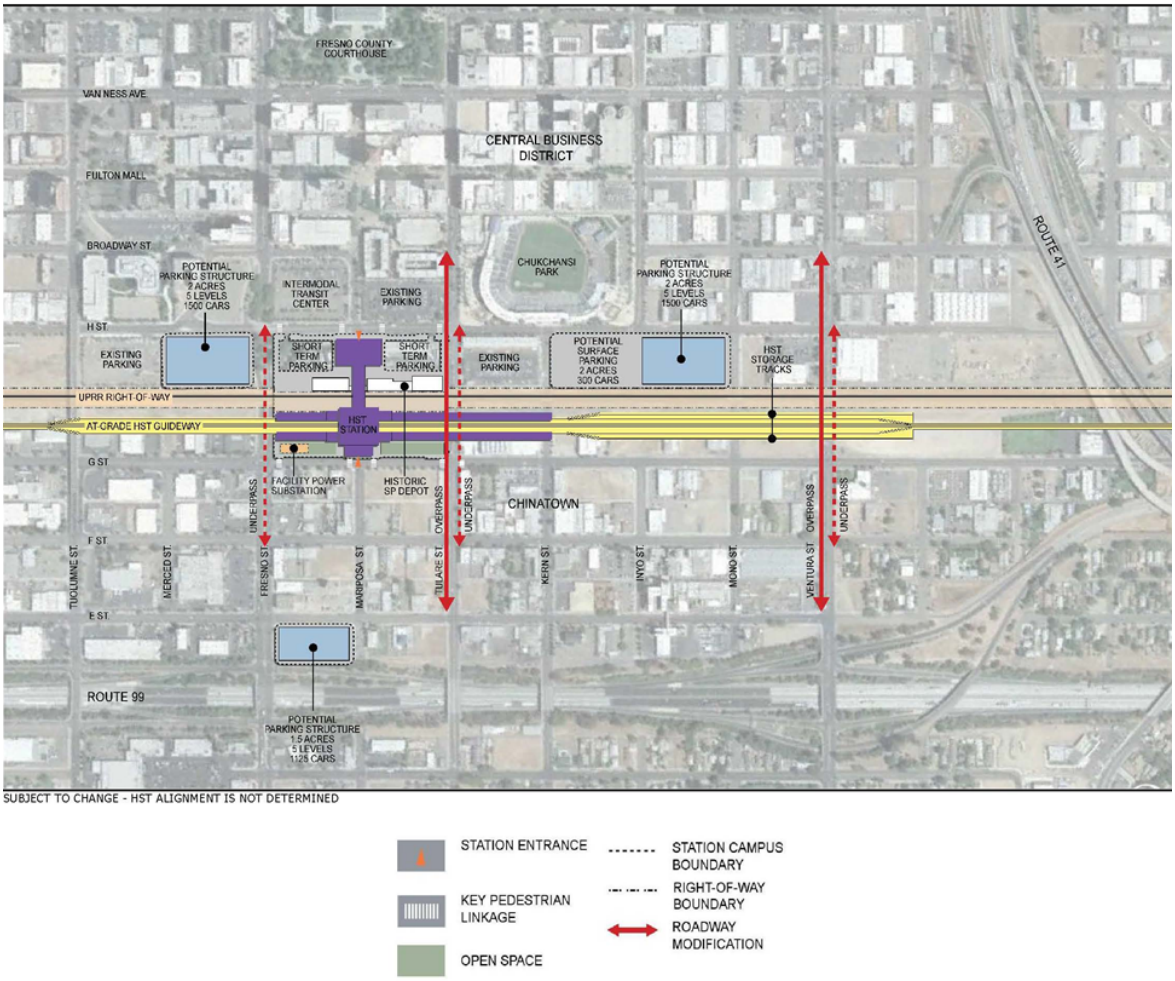

Figure 3
Downtown Fresno Station –
Preferred Mariposa Street Alternative

3.6.2 Kings/Tulare Regional Station–East Alternative

The potential Kings/Tulare Regional Station–East Alternative would be located east of SR 43 (Avenue 8) and north of the San Joaquin Valley Railroad on the BNSF Alternative (Figure 4). The station building would be approximately 40,000 square feet with a maximum height of approximately 75 feet. The entire site would be approximately 25 acres, including 8 acres designated for the station, bus bays, short-term parking, and kiss-and-ride areas. An additional approximately 17.25 acres would support a surface parking lot with approximately 2,280 spaces. The balance of parking spaces necessary to meet the 2035 parking demand (2,800 total spaces) would be accommodated in downtown Hanford, Visalia, and/or Tulare, with local transit or shuttle services connecting with the station. Reducing the number of parking spaces provided at

the station would allow for more open space areas, discourage growth at the station, encourage revitalization of the downtowns of Hanford, Visalia, and/or Tulare, and contain the development footprint of the station. Location of station parking in downtown areas would be identified in consultation with local communities to avoid traffic congestion and may require additional environmental review.

It is expected that the Kings/Tulare Regional Station-East Alternative would have higher ridership than the Kings/Tulare Regional Station-West Alternative because it is located 5 miles closer to the cities of Visalia and Tulare and is likely to draw more riders from those cities than the Kings/Tulare Regional Station-West Alternative. The Kings/Tulare Regional Station-East Alternative is located in an area used primarily for agriculture now and is expected to continue to be used for agriculture in the future. Neither the city of Hanford nor Kings County has future land use plans for growth in the vicinity of the Kings/Tulare Regional Station-East Alternative. On the

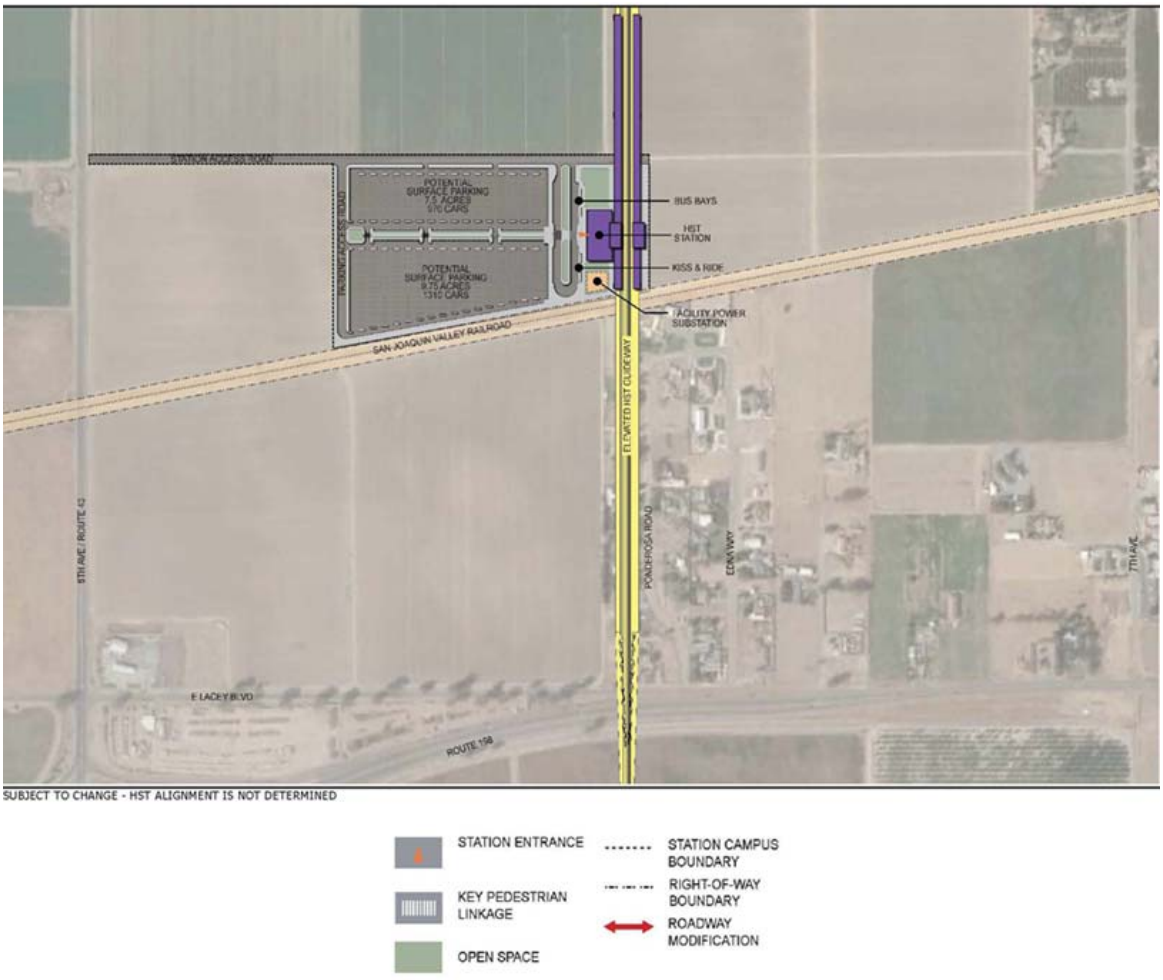

Figure 4
Kings/Tulare Regional Station–East Alternative

other hand, the Kings/Tulare Regional Station-West Alternative is located within an area that is expected to urbanize over the near future. Therefore, the use of the Kings/Tulare Regional Station-East Alternative would be expected to result in urban development where none is currently planned and may ultimately result in the conversion of more farmland unless there is

careful planning and an agreement among local land use jurisdiction to create some king of agricultural buffer around the station.

3.6.3 Kings/Tulare Regional Station–West Alternative

The potential Kings/Tulare Regional Station–West Alternative would be located east of 13th Avenue and north of the San Joaquin Valley Railroad on the Hanford West Bypass 1 and 2 alternatives. The station would be located either at-grade or below-grade depending on which Hanford West Bypass alignment design option is chosen. The at-grade Kings/Tulare Regional Station–West Alternative would include a station building of approximately 100,000 square feet with a maximum height of approximately 36 feet. The entire site would be approximately 48 acres, including 6 acres designated for the station, bus bays, short-term parking, and kiss-and-ride areas. Approximately 5 acres would support a surface parking lot with approximately 700 spaces. An additional 3.5 acres would support two parking structures with a combined parking capacity of 2,100 spaces (Figure 5).

The below-grade Kings/Tulare Regional Station–West Alternative is the Preferred Station Alternative. It would include a station building of approximately the same size and height as the above-grade option. The below-grade station site would include the same components as the at-grade station option on the same number of acres; however, the station platform would be located below-grade instead of at ground level. Approximately 4 acres would support a surface parking lot with approximately 600 spaces and an additional 4 acres would support two parking structures with a combined parking capacity of 2,200 spaces (Figure 6).

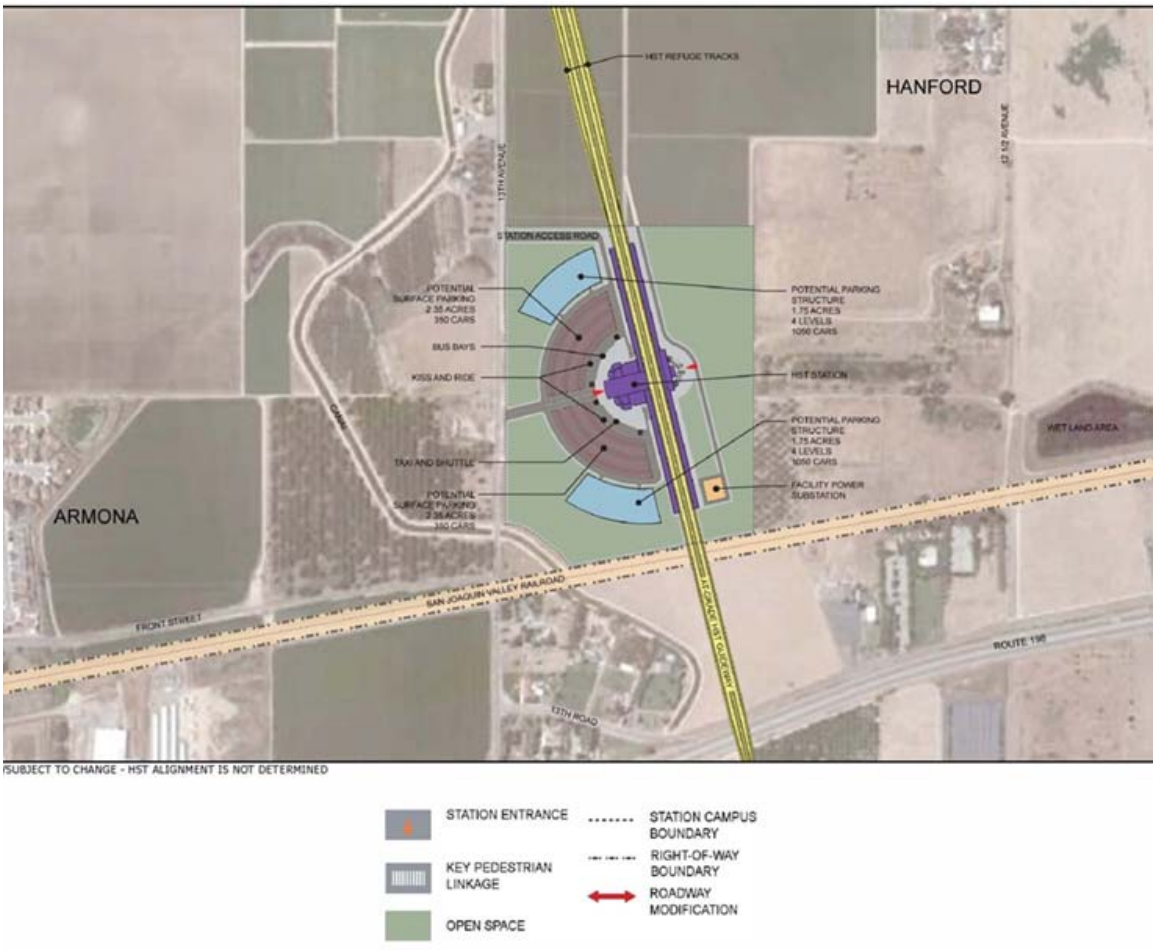

Figure 5
Kings/Tulare Regional Station–West Alternative (at-grade option)

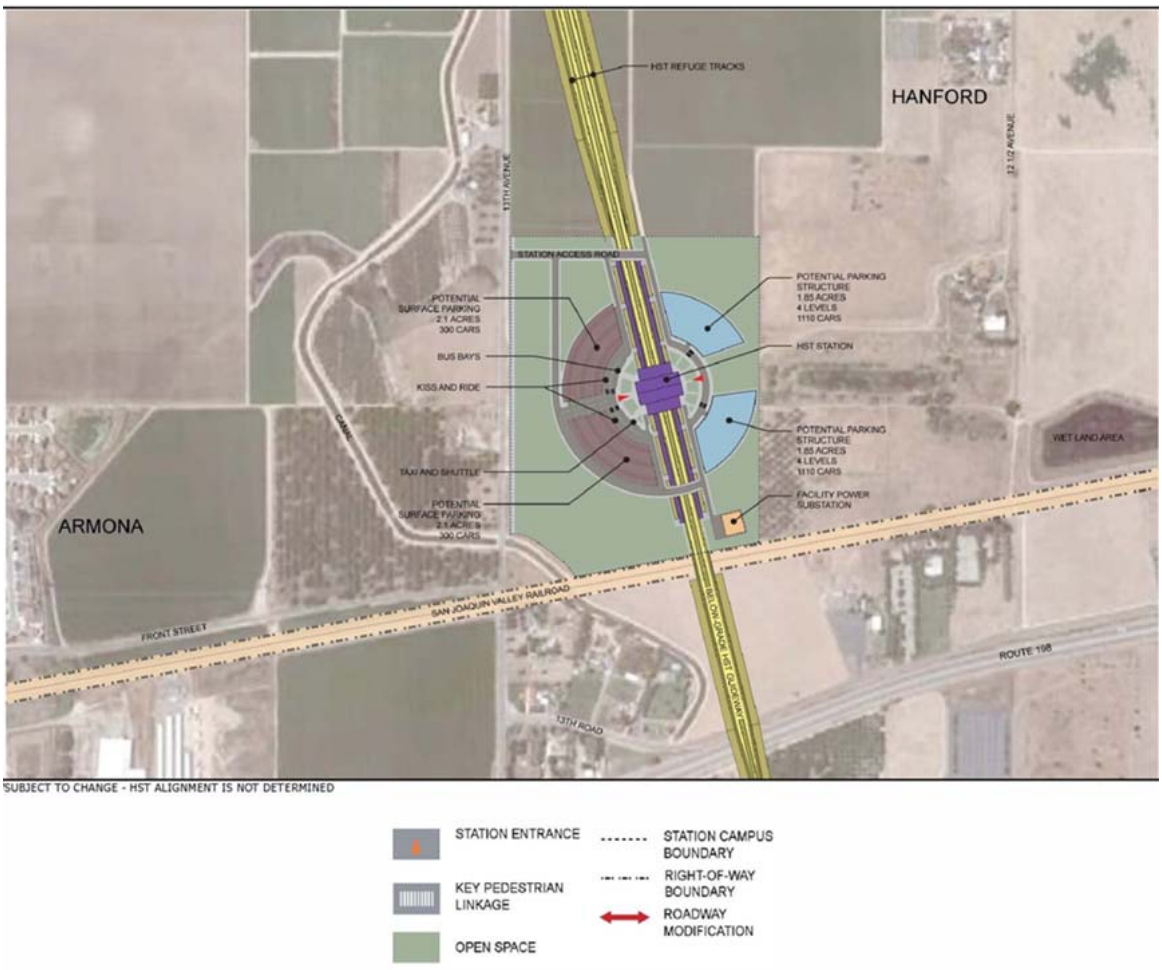

Figure 6
Preferred Station Alternative
Kings/Tulare Regional Station–West Alternative (below-grade option)

3.6.4 Bakersfield Station–North Alternative

The Bakersfield Station–North Alternative would be located at the corner of Truxtun and Union Avenue/SR 204 on the BNSF Alternative. Surrounding land uses in the area consist of offices, commercial, retail, industrial, and government offices. The Amtrak station is west of the proposed station site. A conceptual site plan for this station alternative is provided in Figure 7. Access to the site would be from Truxtun Avenue, Union Avenue, and S Street. Two new boulevards would be built from Union Avenue and S Street to access the station and the supporting facilities. The main entrance would be located on the northern end of the site. The three-level station building would be 52,000 square feet, with a maximum height of approximately 95 feet. The first level would house station operation offices and would also accommodate other trains running along the BNSF Railway line. The second level would include the mezzanine; the platforms and guideway would pass through the third level. The entire site would consist of 19 acres, with 11.5 acres designated for the station, bus transit center, short-term parking, and kiss-and-ride areas. An additional 7.5 acres would house two parking structures, one with a planned capacity of approximately 1,500 cars, and the other with a capacity of approximately 3,000 cars. In addition, another 175 spaces would be provided in surface lots. The balance of the supply necessary to

accommodate the full 2035 parking demand (8,100 total spaces) would be provided through use of underutilized facilities around the station and in Downtown Bakersfield. Identification of these additional spaces would be coordinated with the City of Bakersfield as a part of a comprehensive parking strategy. Additional environmental review may be necessary as parking needs are identified for full system operations. Under this alternative, the station building would be located at the western end of the parcel footprint. The bus transit center and the smaller of the two parking structures (2.5 acres) would be north of the HST tracks. The BNSF Railway track runs through the station site. The HST tracks would be above the BNSF Railway tracks.

Figure 7
Bakersfield Station–North Alternative

3.6.5 Bakersfield Station–South Alternative

The Bakersfield Station–South Alternative would be in the same area as the North Station Alternative, but would be situated along Union and California avenues on the Bakersfield South Alternative, just south of the BNSF Railway right-of-way (Figure 8). The two-level station building would be approximately 51,000 square feet, with a maximum height of approximately 95 feet. The first floor would house the concourse, and the platforms and guideway would be on the

second floor. The entire site would be 20 acres, with 15 acres designated for the station, bus transit center, short-term parking, and kiss-and-ride areas. Five of the 20 acres would support one six-level parking structure with a capacity of approximately 4,500 cars. In addition, another 500 spaces would be provided in surface lots. As with the Bakersfield Station–North Alternative, the balance of the supply necessary to accommodate the full 2035 parking demand (8,100 total spaces) would be identified as a part of a comprehensive parking strategy in coordination with the City of Bakersfield, and may require additional environmental review. Access to the station site would be from two new boulevards: one branching off from California Avenue, and the other from Union Avenue.

Figure 8
Bakersfield Station–South Alternative

3.6.6 Bakersfield Station–Hybrid Alternative

Bakersfield Station–Hybrid Alternative is the Preferred Station Alternative. The Bakersfield Station–Hybrid Alternative would be in the same area as the North and South Station alternatives, and would be located at the corner of Truxtun and Union Avenue/SR 204 on the Bakersfield Hybrid Alternative (Figure 9). The station design includes an approximately 57,000-square-foot main station building and an approximately 5,500-square-foot entry concourse

located north of the BNSF Railway right-of-way. The station building would have two levels with a maximum height of approximately 95 feet. The first floor would house the concourse, and the platforms and guideway would be on the second floor. Additionally, a pedestrian overcrossing would connect the main station building to the north entry concourse across the BNSF right-of-way. The entire site would be approximately 24 acres, with 15 acres designated for the station, bus transit center, short-term parking, and kiss-and-ride areas. Approximately 4.5 of the 24 acres would support 3 parking structures with a total capacity of approximately 4,500 cars. Each parking structure would be 7 levels; one with a planned capacity of 1,750 cars, another with a capacity of 1,315 cars, and the third with a planned capacity of 1,435 cars. An additional 460 parking spaces would be provided in surface lots covering a total of approximately 4.5 acres of the station site. As with the Bakersfield Station–North and Bakersfield Station–South alternatives, the balance of the supply needed to accommodate the full 2035 parking demand (8,100 total spaces) would be identified as a part of a comprehensive parking strategy developed in coordination with the City of Bakersfield. Access to the station site would be from Truxtun Avenue and Union Avenue as well as Hayden Court. Under this alternative, the BNSF Railway track would run through the station site, and the main station building and majority of the station facilities would be sited south of the BNSF railway right-of-way.

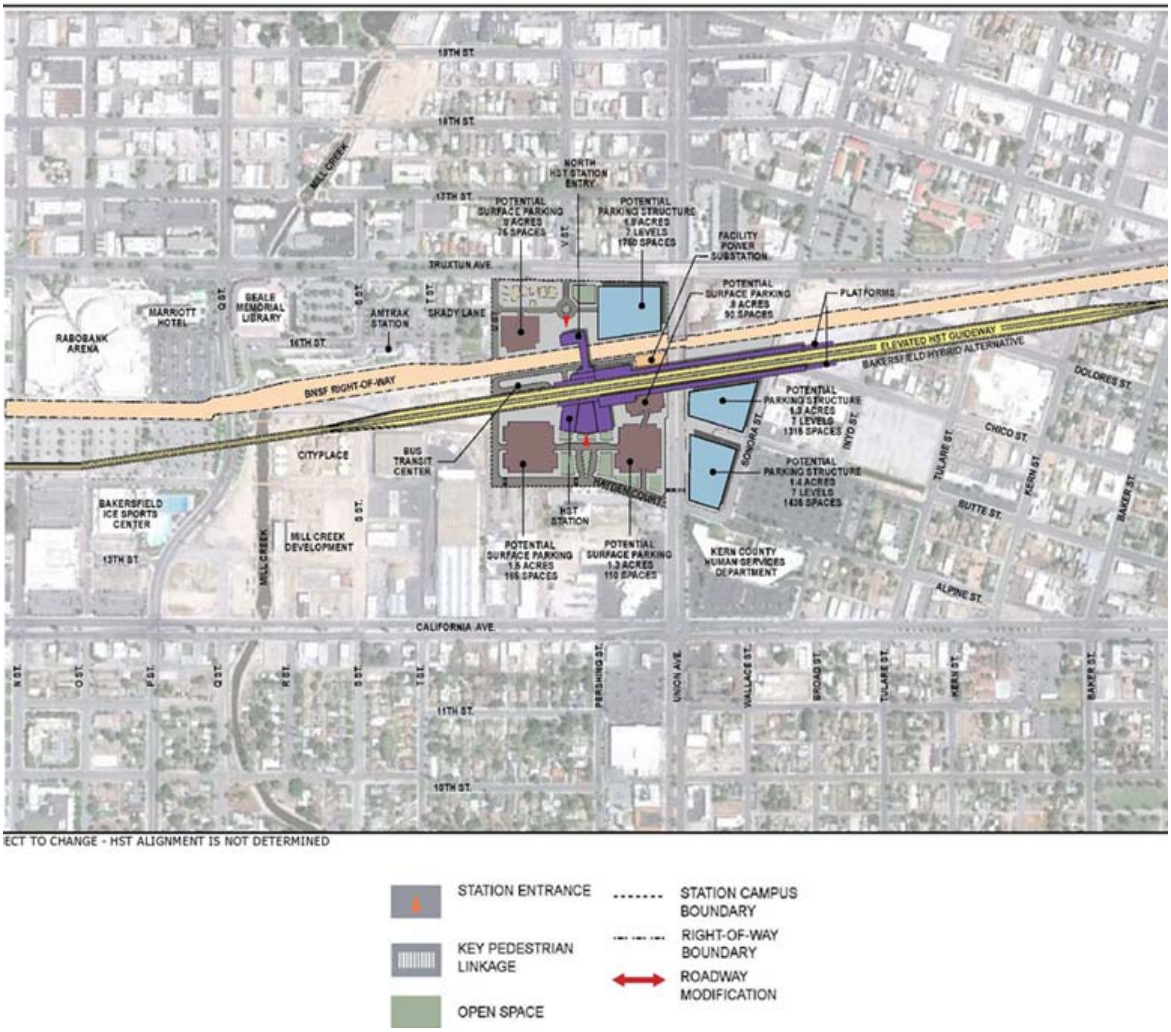

Figure 9
Preferred Station Alternative
Bakersfield Station–Hybrid Alternative

3.7 Regulatory Considerations

The Authority and FRA are working closely with federal, state, and regional agencies to meet regulatory requirements by refining the Fresno to Bakersfield Section alternatives to avoid and minimize impacts and, where necessary, to reach agreement on mitigation measures for impacts that cannot be avoided. One important process that integrates many of the applicable regulatory requirements is Section 404 of the Clean Water Act (CWA) and Section 408 as managed by the USACE with oversight from EPA. The Authority and FRA signed a National Environmental Policy Act (NEPA)/Section 404/408 Integration Process Memorandum of Understanding (MOU) (Authority et al. 2010), which outlines three major checkpoints in the integration of the NEPA and Section 404/408 process. Each checkpoint consists of the submittal of technical data and studies by the Authority and FRA to USACE and EPA for review and consideration prior to issuing a formal written agency response. The first of these submittals is Checkpoint A, which involves preparing a project purpose statement that duly serves NEPA and Section 404 of the CWA requirements. EPA concurred on the Fresno to Bakersfield Section purpose and need on January 20, 2011, and USACE concurred on the purpose and need on February 2, 2011, to satisfy Checkpoint A. The second submittal is Checkpoint B, which is required to screen and reduce the potential alternatives to an appropriate range of "reasonable" and "practicable"[1] alternatives using the best available information. On July 5 and June 24, 2011, respectively, USACE and EPA provided letters on the alternatives that the Authority and FRA proposed to carry through the EIR/EIS. Both agencies concurred on the range of alternatives except for the Hanford West Bypass Alternative. The Authority and FRA had chosen not to carry the Hanford West Bypass Alternative through the Draft EIR/EIS. The USACE and EPA disagreed with this decision. The Draft EIR/EIS was circulated without the Hanford West Bypass Alternative. That alternative was included in the Revised DEIR/Supplemental DEIS.

Finally, Checkpoint C is the assembly and assessment of information contained in the EIR/EIS and associated technical studies for consideration by USACE and EPA in determining the Preliminary LEDPA and providing a formal agency response. The documentation includes those analyses completed to meet requirements of NEPA, the CWA 401/Section 404, and the Rivers and Harbor Act Section 14, which include consideration of compliance with the federal Endangered Species Act and the National Historic Preservation Act. The Authority is in the process of completing Checkpoint C.

3.8 Agency Consultations

Leading to the submittal of the Checkpoint C information, the FRA, the Authority, and resource specialists have been meeting with the following agencies: USFWS in development of the Biological Opinion; the California Department of Fish and Wildlife (CDFW) in the development of a California Endangered Species Act permit and 1602 Streambed Alteration Agreements; the San Joaquin Central Valley Flood Control Board and the USACE in the development of the approach to the 408 permit related to crossing waters of the U.S.; the State Historic Preservation Office in the National Historic Preservation Act Section 106 consultation process; the State Water Resources Control Board in development of a Clean Water Act Section 401 Water Quality Certification; and the San Joaquin Valley Air Pollution Control District in the development of construction emission mitigation. Other agencies represented have included EPA and the California Air Resources Board.

In addition, a series of Technical Working Group (TWG) meetings have occurred to coordinate and communicate technical issues and clarifications regarding how to assess the functional values

[1] "Practicability" is defined as available and capable of being done after taking into consideration cost, existing technology, and logistics in light of the overall project purposes (40 CFR Part 230.10(a)(2)).

of sensitive wetlands and waters of the U.S. so that impacts can be appropriately mitigated. For mitigation planning, the watershed analysis will provide possible targets for appropriate mitigation.

To assist in applying regulatory responsibilities (e.g., CWA Sections 401/404, and California Endangered Species Act Sections 2081 and 1600), USACE suggested that mitigation planning efforts should not distinguish aquatic impacts from wildlife impacts. In accordance with the intent of the Compensatory Mitigation Plan, the Authority is working on the Mitigation Strategy and Implementation Plan to identify currently available mitigation sites to meet obligatory mitigation consistent with the overall project schedule.

Based on these agency consultations and the information contained above, it is the staff's assessment that the Preferred Alternative is likely to be the LEDPA.

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Section 4
Preferred Alternative

4.0 Preferred Alternative

The Authority staff is preliminarily recommending a Preferred Alternative for the Fresno to Bakersfield section that combines the BNSF Alternative with the modified Hanford West Bypass Alternative 2 below-grade option, the Corcoran Bypass, and the Allensworth Bypass. Based on environmental information developed for the Project, the Wasco-Shafter Bypass Alternative and the Bakersfield Hybrid Alternative appear to be part of the Preferred Alternative. However, information continues to be received from stakeholders in the Wasco, Shafter, and Bakersfield areas. The Authority staff wishes to continue to work with these stakeholders to identify the most appropriate HST alignment from Wasco to the project terminus in Bakersfield. The recommended Preferred Alternative includes the Mariposa Street Alternative for the Downtown Fresno Station (already approved) and the Kings/Tulare Regional Station-West Alternative (below grade option). With the selection of the Bakersfield Hybrid Alternative, the Preferred Alternative would also include the Bakersfield Hybrid Station. Due to influencing factors from adjacent sections, the identification of the preferred HMF location is being postponed until after the Merced to Fresno Section Supplemental EIR/Supplemental EIS environmental evaluation process is complete. The Authority staff has consulted with FRA staff on the analysis and reasons for selecting preferred alternatives. The preliminarily recommended Preferred Alternative is shown in Figure 10 and the reasons for the selection of each project feature are described below.

4.1 Preferred Alignment

Based on the information provided in the Draft EIR/EIS and Revised DEIR/Supplemental DEIS, the Preferred Alternative alignment includes the BNSF Alternative combined with the modified Hanford West Bypass Alternative 2 below grade option, the Corcoran Bypass, the Allensworth Bypass, the Wasco-Shafter Bypass Alternative, and the Bakersfield Hybrid Alternative.

4.1.1 Analysis

As presented above, the Preferred Alternative would have fewer impacts to aquatic resources than the BNSF Alternative and generally incorporates the least impacts to aquatic resources of the individual geographic alternatives, an important consideration for Clean Water Act compliance. It would have fewer Section 4(f) uses than the BNSF Alternative and all individual geographic alternatives, an important consideration in that it is the most prudent and feasible alternative in compliance with U.S. Department of Transportation requirements. While some effects vary by individual geographic alternative, the Preferred Alternative would have fewer effects on residences, commercial and industrial facilities, and community resources than the BNSF Alternative, as well as fewer construction impacts in the areas of noise, farmland conversion, air quality, cultural resources, and parks. Overall, in balancing the effects on the natural and community resources, the Preferred Alternative minimizes environmental impacts the most out of the 72 possible combinations of alternatives for the Fresno to Bakersfield Section. The Preferred Alternative has the least constructability issues, which is also reflected in being the lowest cost alternative, at approximately $800 million less than the BNSF Alternative. The Preferred Alternative is the least expensive because it minimizes environmental impacts the most and has the least constructability issues. This is because this alternative is shorter, has less elevated guideway, and fewer impacts than the BNSF Alternative. Trains on the Preferred Alternative would take 33 minutes and 16 seconds to travel between Fresno and Bakersfield, 12 seconds more than the BNSF Alternative, and the selection of the Bakersfield Hybrid alignment as the Preferred Alternative would add an additional minute to the Bakersfield to Palmdale Section. While the Bakersfield Hybrid segment of the Preferred Alternative would require reduced speeds, it provides the advantage of avoiding the Bakersfield High School campus, and reduces the number of religious facilities and homes impacted in east Bakersfield. Even with the reduced

speed in Bakersfield, the Preferred Alternative would operate within the optimal express train travel time of 37 minutes between Fresno and Bakersfield.

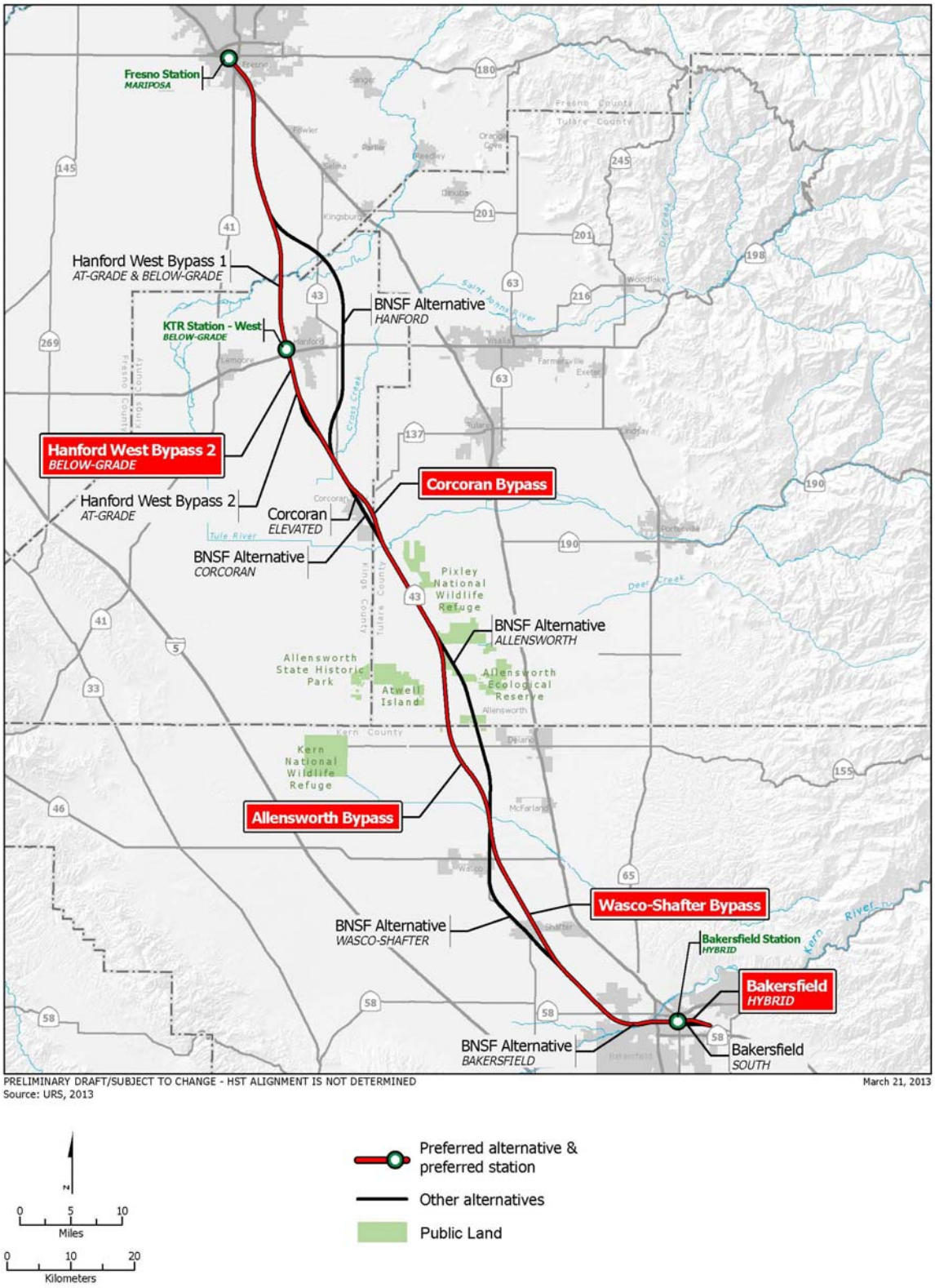

Figure 10
Fresno to Bakersfield Preferred Alternative

4.2 Stations

The Authority has identified the Mariposa Street Station Alternative as the preferred Downtown Fresno Station, shown in Figure 3. The staff recommends the Kings/Tulare Regional Station–West Alternative (below-grade option) as the preferred Kings/Tulare Regional Station, shown in Figure 6; and the Bakersfield Hybrid Station, shown in Figure 9.

4.2.1 Analysis

The preferred station for the City of Fresno is the Mariposa Street Station Alternative. Based on cooperation with the City of Fresno, the Mariposa Street Station Alternative provides the best opportunity for enhancement of land use densities consistent with the City's current planning for transit-oriented development in the draft *Fulton Corridor Specific Plan* and the draft *Downtown Neighborhoods Plan*. Stations in the Kings/Tulare area and in Bakersfield were selected because they lie on the Preferred HST Alternative alignments in those locations.

4.3 Heavy Maintenance Facility

The Authority has not identified a preferred alternative for an HMF site at this time. This decision will be deferred to a later date as part of the San Jose to Merced EIR/EIS document since the selection of the HMF is highly dependent on this process.

4.3.1 Analysis

Alternative HMF sites have been identified along the Merced to Fresno and Fresno to Bakersfield HST sections. The Preferred Alternative identified for the Merced to Fresno Section has HMF site alternatives whose selection depends on the east-west wye connection between the San Jose to Merced and Merced to Fresno HST sections. An EIR/EIS for the Wye connection will be prepared to evaluate and select an alignment for the Wye from Carlucci Road east to Merced. This will be completed after the Fresno to Bakersfield Section Final EIR/EIS is certified. This decision may influence the range of potential HMFs within the Merced to Fresno Section. Therefore, the preferred HMF site will be identified once environmental review of the Wye is completed.

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Attachment
Development of Alternatives

1.0 HST Project-Level Alternatives Development Process: How the Initial Range of Alternatives Was Developed

The Statewide Final Program EIR/EIS (Authority and FRA 2005) provided a first-tier analysis of the general effects of implementing the HST System across two-thirds of the state. That document provided the Authority and the FRA with the environmental analysis necessary to evaluate the overall HST System and to make broad decisions about general high-speed train alignments and station locations for further study in second-tier EIR/EIS documents. This analysis included selection of a BNSF alignment as the "preferred option" from Fresno to Bakersfield. The Statewide Program EIR/EIS also selected preferred station locations in Downtown Fresno and Downtown Bakersfield, with no station in between. Figure 1 shows the reasonable alignment options for Fresno to Bakersfield considered in the Statewide Program EIR/EIS.

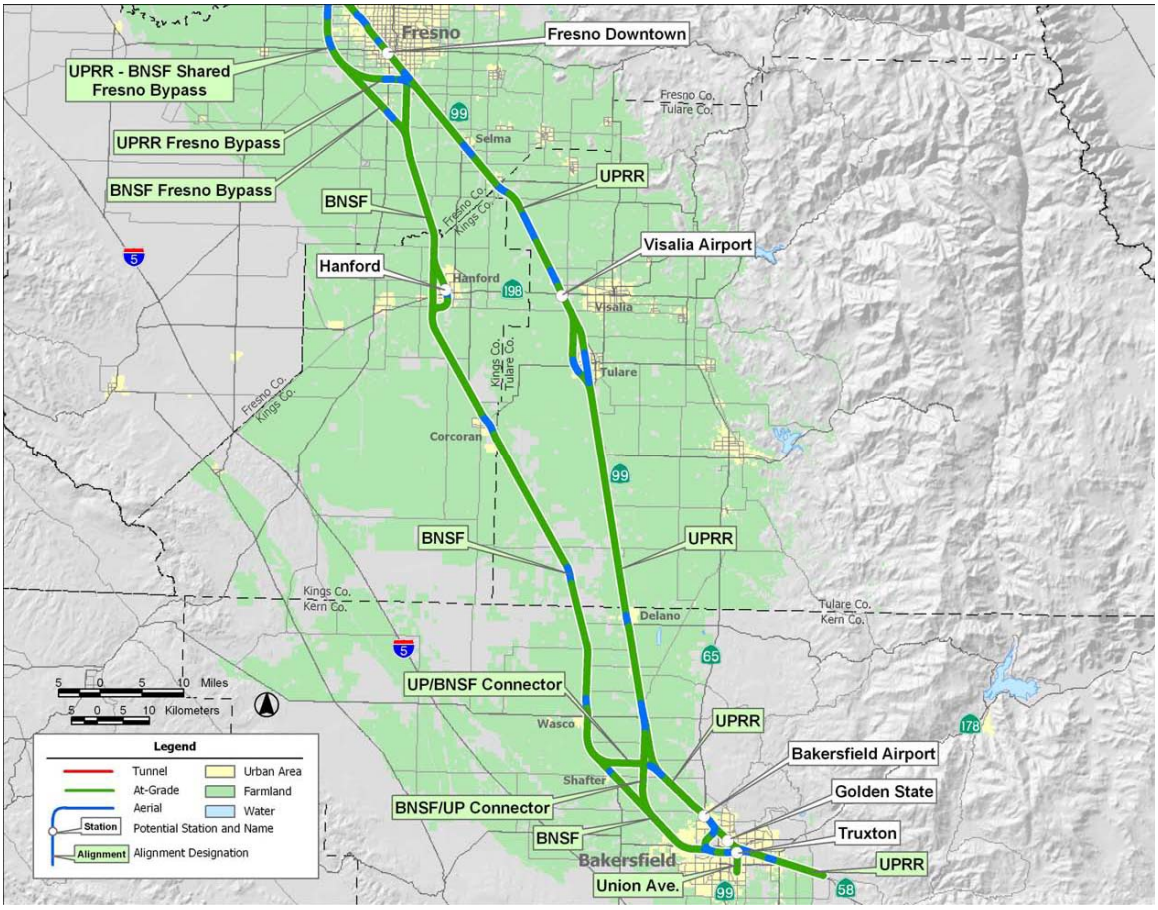

Figure 1
Reasonable alignment options for Fresno to Bakersfield evaluated in the 2005 Statewide Program EIR/EIS

A further assessment of the alternatives, the *Visalia-Tulare-Hanford Station Feasibility Study* (VTH Study) (Authority 2007) concluded that a station in the Visalia-Tulare-Hanford area would be feasible. In February 2008, these findings were presented to the Authority Board with a recommendation that the scope of the project-level environmental review for the Fresno to Bakersfield Section include a potential station in the vicinity of Visalia (Authority 2008).

The conclusions of the Statewide Final Program EIR/EIS and the VTH Study provided the basis for the initial range of alternatives to be considered in the alternatives analysis process, as described below.

2.0 Development Process for Project-Level Alternatives

After completion of the Statewide Final Program EIR/EIS and the VTH Study, the Authority, in cooperation with FRA, began the project-specific environmental review process, which included the filing of a Notice of Intent (published in 2009) and an agency and public scoping process. During the scoping period for the Fresno to Bakersfield Project EIR/EIS, the Authority and FRA received public and agency comments, including comments made during interagency coordination meetings, to inform the screening evaluation of the initial alternatives.

After the Authority identified the initial project alternatives (based on the Statewide Program EIR/EIS and the VTH Study), alignment plans, preliminary profile concepts, and cross sections were developed. The project design criteria dictated that the system be designed for 220 mph throughout with few exceptions (e.g., to avoid sensitive habitat areas, important community resources). These project design criteria provided the basis for the formal alternatives analysis described below.

2.1 Methodology of the Alternatives Analysis

The evaluation of project-level alternatives followed the process described in *Alternatives Analysis Methods for Project EIR/EIS, Version 2* (Authority 2009). The evaluation began with the Authority's determination whether each alternative was consistent with the project purpose and need, the basic components of which are as follows:

- Capable of reaching operating speeds of 220 mph.
- Connects Fresno Station to Bakersfield Station.
- Is a practicable alternative.

Other key objectives for the each alternative were:

- Provides intercity travel capacity to supplement critically overused interstate highways and commercial airports.

- Meets future intercity travel demand that will be unmet by the present transportation system and increases capacity for intercity mobility.

- Maximizes the use of existing transportation and utility corridors to the extent feasible.

The evaluation process also included measures of potential environmental effects. This assessment involved both qualitative and quantitative measures that addressed applicable policy and technical considerations. Screening included the use of environmental criteria to measure the potential effects of the proposed alternatives on the natural and human environment. The criteria included field inspections of corridors to field-verify certain data and a Geographic Information System (GIS)–based analysis of potential impacts to farmland, water resources, wetlands,

threatened and endangered species, cultural resources, current urban development, and infrastructure.

The process also included an evaluation of initial alternatives according to land use and community impact criteria. The land use evaluation measured the extent to which the station alternatives supported transit use; were consistent with adopted local, regional, and state plans; and were supported by existing and future growth areas. The community impact evaluation measured the extent of disruption to neighborhoods and communities, such as the potential to minimize (1) right-of-way acquisitions, (2) division of established communities, and (3) conflicts with community resources.

2.2 Preliminary and Supplemental Alternatives Analyses

To define the project-level alternatives to be considered in the formal environmental process, the Authority and FRA prepared four alternatives analyses (one preliminary report and three supplemental reports:

Table 1
Alternatives Analysis Reports for the Fresno to Bakersfield Section

Report	Date	Subject Matter
Preliminary Alternatives Analysis (Authority and FRA 2010a)	June 2010	Comprehensive evaluation of alternatives for the entire Fresno to Bakersfield Section, with focus on three subsections (the Fresno, Rural, and Bakersfield subsections).
Supplemental Alternatives Analysis (Authority and FRA 2010b)	September 2010	Evaluation of potential alignments adjacent to the BNSF tracks through Downtown Hanford.
Supplemental Alternatives Analysis (Authority and FRA 2011f)	May 2011	Additional screening and refinement of alignment alternatives throughout the section.
Supplemental Alternatives Analysis (Authority and FRA 2011g)	December 2011	Definition and evaluation of potential alignments and station locations west of Hanford.

Although the alternatives analysis process considered multiple criteria, the process emphasized the project objective to maximize the use of existing transportation and utility corridors and available rights-of-way to the extent feasible.

Preliminary Alternatives Analysis (June 2010)

The alternatives included in the Preliminary AA Report followed the existing freight corridors of the BNSF corridor and the UPRR, the SR 43 corridor, and an electrical transmission corridor east of Hanford.

The Fresno to Bakersfield Section includes the urbanized areas of Fresno and Bakersfield and the more rural area between the two cities; these areas have varying and different concerns. Therefore, the Preliminary AA Report divided the corridor into three subsections: Fresno, Rural, and Bakersfield. Linking alternatives from each subsection together formed the complete, end-to-end alternatives for the Fresno to Bakersfield Section.

The Preliminary AA Report identified five basic initial alternative alignments for the Fresno Subsection that were based on either the preferred alignment in the Statewide Program EIR/EIS or input from the Fresno Technical Working Group: UPRR East, UPRR West, Golden State

Boulevard, SR 99, and Fresno West Bypass. Working from these five basic alternatives, the Preliminary AA Report defined 13 discrete alignment alternatives that reflected variations in the profile of the HST guideway and in the connections to the Rural Subsection to the south. The Preliminary AA Report recommended that three alternatives be carried forward for consideration in the EIR/EIS:

- UPRR East.
- UPRR West.
- UPRR West/East Crossover.

All three of these alternatives were assumed to be elevated through Fresno, to be adjacent to the UPRR right-of-way in Fresno, to leave Fresno to the south, generally along the BNSF corridor, and to provide a Downtown Fresno Station near Mariposa Street (Figure 2).

The Preliminary AA Report identified a set of initial alternatives for the Rural Subsection that originated from a combination of the Statewide Program EIR/EIS; the VTH Study; and input from local, state, and federal agency officials and stakeholders during the scoping process. The initial alternatives represented variations on alignments following the BNSF and UPRR / SR 99 corridors from Fresno to Bakersfield. The Preliminary AA Report screening of the initial alternatives identified six alternatives through the entire length of the Rural Subsection. Three of these alternatives were based on the preferred alignment of the Statewide Program EIR/EIS; these alternatives generally paralleled the BNSF right-of-way from Fresno to Bakersfield and served a potential station just east of Hanford. The other three alternatives were configured to serve a potential station closer to Visalia and generally paralleled the UPRR between Fresno and Visalia before rejoining the BNSF right-of-way south of Corcoran. In addition to these six alternatives for the Rural Subsection, the Preliminary AA Report evaluated a series of "local options" related to the six alternatives. The local options included different approaches to passing through five areas: (1) Fowler, Selma, and Kingsburg; (2) Hanford; (3) Corcoran; (4) Allensworth; and (5) Wasco and Shafter. In most cases, these options represented choices to either pass through or around these areas, with additional options in some locations concerning the profile of the HST guideway (either at-grade or elevated). The Preliminary AA Report recommended that the following be carried forward into the EIR/EIS (Figure 2):

- BNSF Hanford East Bypass
- Elevated through Corcoran.
- Corcoran At-Grade Bypass.
- Allensworth Avoidance.
- Elevated through Wasco and Shafter.
- Wasco and Shafter At-Grade Bypass.

The initial alternatives for the Bakersfield Subsection described in the Preliminary AA Report were all variations on the preferred alignment in the Statewide Program EIR/EIS and were developed to reduce potential effects on surrounding land uses, to address community concerns in Bakersfield, and to locate an HST station in Downtown Bakersfield, near the existing Amtrak Station. The Preliminary AA Report recommended that the following be carried forward into the EIR/EIS (Figure 2):

- Alternative D1; two local options, one with an elevated alignment north of UPRR (D1-N) and one with an elevated alignment south of UPRR (D1-S).

- Alternative D2; two local options, one with an elevated alignment north of the BNSF right-of-way in central Bakersfield (D2-N) and one with an elevated alignment over the BNSF right-of-way in central Bakersfield (D2-S).

Four Heavy Maintenance Facility sites were recommended for further analysis:

- The Fresno Works–Fresno HMF Site.
- The Kings County–Hanford HMF Site.
- The Kern Council of Governments–Wasco HMF Site.
- The Kern Council of Governments–Shafter East HMF Site.

A fifth site, Kern Council of Governments—Shafter West, was added for consideration after completion of the Preliminary AA Report. The HMF site alternatives will be separately considered in the context of the overall system requirements.

On June 3, 2010, the Authority Board met to consider the recommendations of the Preliminary AA Report (Authority 2010a). The Board acted to accept the recommendations, which are summarized below (from north-south, according to subsection):

- Fresno UPRR West Elevated
- Fresno UPRR East Elevated
- Fresno UPRR Cross
- Rural Full
- BNSF–Hanford East
- Rural Local Options
- Through Corcoran, East Side of BNSF, Elevated
- Corcoran East Bypass, At-Grade
- Allensworth Bypass Alternative, At-Grade (west of BNSF right-of-way)
- Through Wasco and Shafter, Elevated
- Wasco and Shafter Bypass, At-Grade
- Bakersfield North
- Bakersfield South (in California Ave)
- HMF site alternatives
- Fresno Works–Fresno
- Kings County–Hanford
- Kern Council of Governments–Wasco
- Kern Council of Governments–Shafter

This action provided the basis to move forward with development of the project definition to be evaluated in the Draft EIR/EIS.

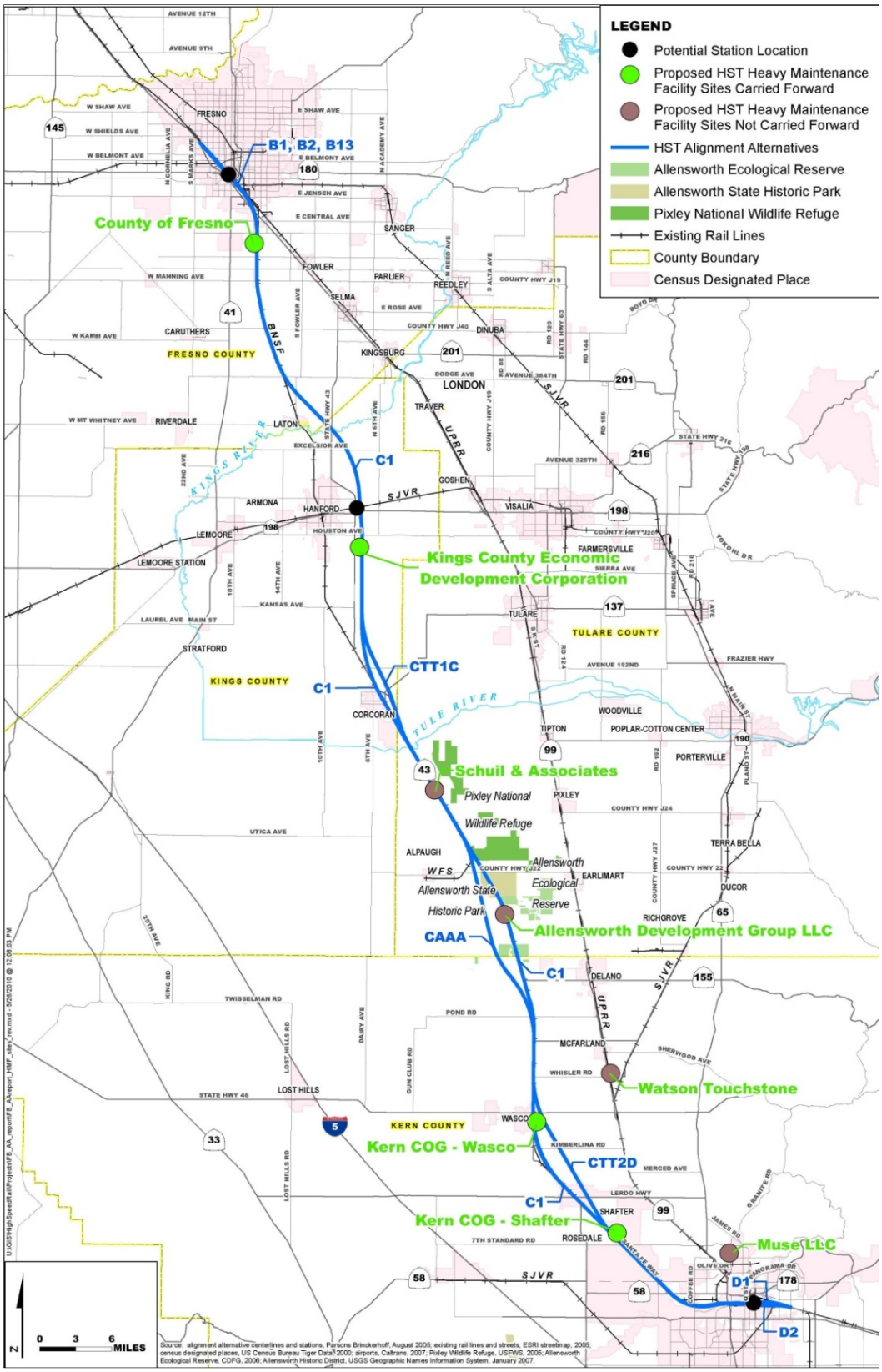

Figure 2
Alternatives carried forward and heavy maintenance facility sites

Supplemental Alternatives Analysis (September 2010)

In September 2010, in response to concerns about the potential impacts to agricultural lands and the operation of the BNSF Hanford East Alternative, the Authority issued a Supplemental Alternatives Analysis (Authority and FRA 2010b) to update the Preliminary AA Report (Authority and FRA 2010a). This analysis identified two alignment options (H1 and H2) that would essentially follow the BNSF right-of-way through Hanford. The two options differed principally in terms of the location of a potential station, H1 accommodating a station in Downtown Hanford and H2 accommodating a station located approximately halfway between Hanford-Armona Road and Houston Avenue, at the southern edge of Hanford. The September 2010 Supplemental Alternatives Analysis recommended that neither of these alternatives be carried forward into the Draft EIR/EIS for the following reasons (relative to the BNSF–Hanford East Alternative):

- Increased residential and business impacts.
- Increased noise impacts.
- No reduction in environmental impacts.
- Reduced connectivity for a potential regional station.
- No community support.

On September 2, 2010, the Authority Board considered and accepted the recommendations of the September 2010 Supplemental Alternatives Analysis (Authority 2010b). Thus, no changes were made to the alternatives being developed for consideration in the Draft EIR/EIS.

Supplemental Alternatives Analysis (May 2011)

In May 2011, the Authority issued a second Supplemental Alternatives Analysis (Authority and FRA 2011f) to update the Preliminary AA Report from June 2010 (Authority and FRA 2010a) and the September 2010 Supplemental Alternatives Analysis (Authority and FRA 2010b). The May 2011 Supplemental Alternatives Analysis presented documentation and analysis of recommended modifications to the alternatives contained in the prior reports, including the following:

- Additions of new alternatives (alignments, station sites, and HMF sites).
- Removal of existing alternatives.
- Shifts in the horizontal alignments of alternatives.
- Changes in the profiles of existing alternatives from elevated to at-grade.

Each of the modifications recommended in the May 2011 Supplemental Alternatives Analysis was based on one or more of the following benefits:

- Reduced impacts on sensitive natural resources and urban populations.
- Increased benefits to local residents, property owners, and business owners.
- Reduced project and stakeholder costs.
- A project with fewer impacts that is more cost-effective overall.

The May 2011 Supplemental Alternatives Analysis made the following recommendations for the Fresno Subsection:

- Change the UPRR West Alternative profile from elevated to at-grade from San Joaquin Street to Jensen Avenue.
- Add an alternative station location at Mariposa Street.
- Remove UPRR East and Crossover Alternatives from further consideration.

The May 2011 Supplemental Alternatives Analysis made the following recommendations for the Rural Subsection:

- Shift the existing alignment between Conejo and Corcoran in two locations: (1) between Conejo and the proposed Kings/Tulare Regional Station (east of Hanford at SR 198) and (2) between Idaho Avenue (south of the Kings/Tulare Regional Station) and Niles Avenue just north of Corcoran.
- Add a new alternative west of BNSF at-grade, from Nevada Avenue north of Corcoran to Quebec Avenue (Avenue 144) south of Corcoran.
- Shift the Preferred Corcoran Alternative closer to Corcoran.
- Shift the Allensworth Bypass Alternative to the west.
- Shift the BNSF Alternative in Wasco-Shafter closer to BNSF tracks near Kimberlina Road.
- North of Shafter: Change the BNSF Alternative profile from elevated to at-grade.
- South of Shafter: Change the BNSF Alternative profile from elevated to at-grade, and shift the alignment from east to west of the BNSF tracks.
- Shift the Wasco-Shafter Bypass Alternative slightly to the east.
- Add a new Shafter candidate HMF site west of the BNSF tracks.

The May 2011 Supplemental Alternatives Analysis made the following recommendations for the Bakersfield Subsection:

- Change the profile from elevated to at-grade between Hageman Road and Palm Avenue.

The May 2011 Supplemental Alternatives Analysis also recommended that the alignment definitions for all alternatives be changed from "share BNSF right-of-way" to "remain adjacent to the BNSF right-of-way."

On May 5, 2011, the Authority Board considered and accepted the recommendations of the May 2011 Supplemental Alternatives Analysis (Authority 2011a). With these recommendations, in conjunction with the recommendations of the Preliminary AA Report, the project description and the alternatives to be considered in the Draft EIR/EIS were established.

Supplemental Alternatives Analysis (December 2011)

In December 2011, the Authority issued a third Supplemental Alternatives Analysis (Authority and FRA 2011g). The previous reports served as the basis for the alternatives contained in the Draft EIR/EIS that was published in August 2011. The December 2011 Supplemental Alternatives Analysis presented documentation and analysis of a recommended new alignment and station location west of Hanford in Kings County.

In response to stakeholder, agency, and public feedback on the HST alignment that bypasses Hanford to the east, the Authority re-introduced alternative routes that would bypass Hanford to the west, along with alternative station locations (north and south of SR 198) to serve the Kings/Tulare region. A variation on the Hanford West Bypass 1 and 2 alternatives was identified in the 2005 Statewide Program EIR/EIS (Authority and FRA 2005), so inclusion of these alternatives for further study was consistent with previous decisions.

In commencing with the preparation of the December 2011 Supplemental Alternatives Analysis, the following general characteristics of a new Hanford West Bypass Alternative were defined:

- Between Conejo and Corcoran, it would remain adjacent to the BNSF tracks to the greatest extent possible.
- It would run primarily at-grade, though other profiles in the general area of SR 198 and the SJVR–Cross-Valley Railroad tracks would be possible.

- It would have two variations at the south end to join with either the Corcoran alignments on the east side of the BNSF tracks or on the west side of the BNSF tracks.
- It would be defined to minimize impacts on dairies, wetlands, other agricultural lands, housing, and community facilities, while providing a feasible, cost-effective option for the Authority.

The December 2011 Supplemental Alternatives Analysis recommended that the Hanford West Alternative be carried forward for impact analysis and inclusion in the Revised DEIR / Supplemental DEIS (Authority and FRA 2012f). In doing so, the report specified two locations where an elevated profile would be necessary: (1) the Kings River crossing and (2) the BNSF crossing between Kent and Kansas Avenues (to match the Corcoran Alternatives east and west of the BNSF tracks. The HST profile near the SJVR and SR 198 crossings was specified to be at-grade with the appropriate undercrossings or overcrossings of local roads, SJVR, and SR 198.

The December 2011 Supplemental Alternatives Analysis also recommended that a station alternative be located east of 13th Avenue and north of SVJR. The northern location was determined to afford the best opportunity for intermodal connections, including regional bus service, Amtrak service (via a shuttle to the Downtown Hanford Station), and potential future commuter rail service using the SJVR. This location was also determined to provide the best opportunity for transit-oriented development, particularly due to its superior access to Downtown Hanford and the city's principal retail and office corridor (Lacey Boulevard).

On December 13, 2011, the Authority Board considered and accepted the recommendations of the December 2011 Supplemental Alternatives Analysis (Authority 2011b). With these recommendations, the project description and alternatives to be considered in the Revised DEIR / Supplemental DEIS (Authority and FRA 2012f) were established (Figure 3).

2.3 Refinements of Alternatives

After the December 2011 Supplemental Alternatives Analysis, a series of meetings and outreach activities led to further refinement of the Bakersfield alternatives. The Authority and FRA, in cooperation with the affected stakeholders, developed a hybrid alternative alignment for the Bakersfield subsection to address substantive comments received during public and agency review of the Draft EIR/EIS. This hybrid alternative is a variation of the two Bakersfield subsection alternatives evaluated in the Draft EIR/EIS, with all three alternatives sharing corresponding termini and an HST station generally in the vicinity of Downtown Bakersfield, near the Amtrak station. The Bakersfield Hybrid Alternative, developed in early 2012, was carried forward into the environmental analysis in the Revised DEIR / Supplemental DEIS (Authority and FRA 2012f) (Figure 3).

Subsequent to publication of the Revised DEIR / Supplemental DEIS, minor modifications were made to the Hanford West Bypass 2 Alternative (below grade) to avoid two potential uses of Section 4(f) properties. In addition, minor modifications were made to account for maintenance access along the alignment and to account for design refinements on the location of communications and power traction facilities.

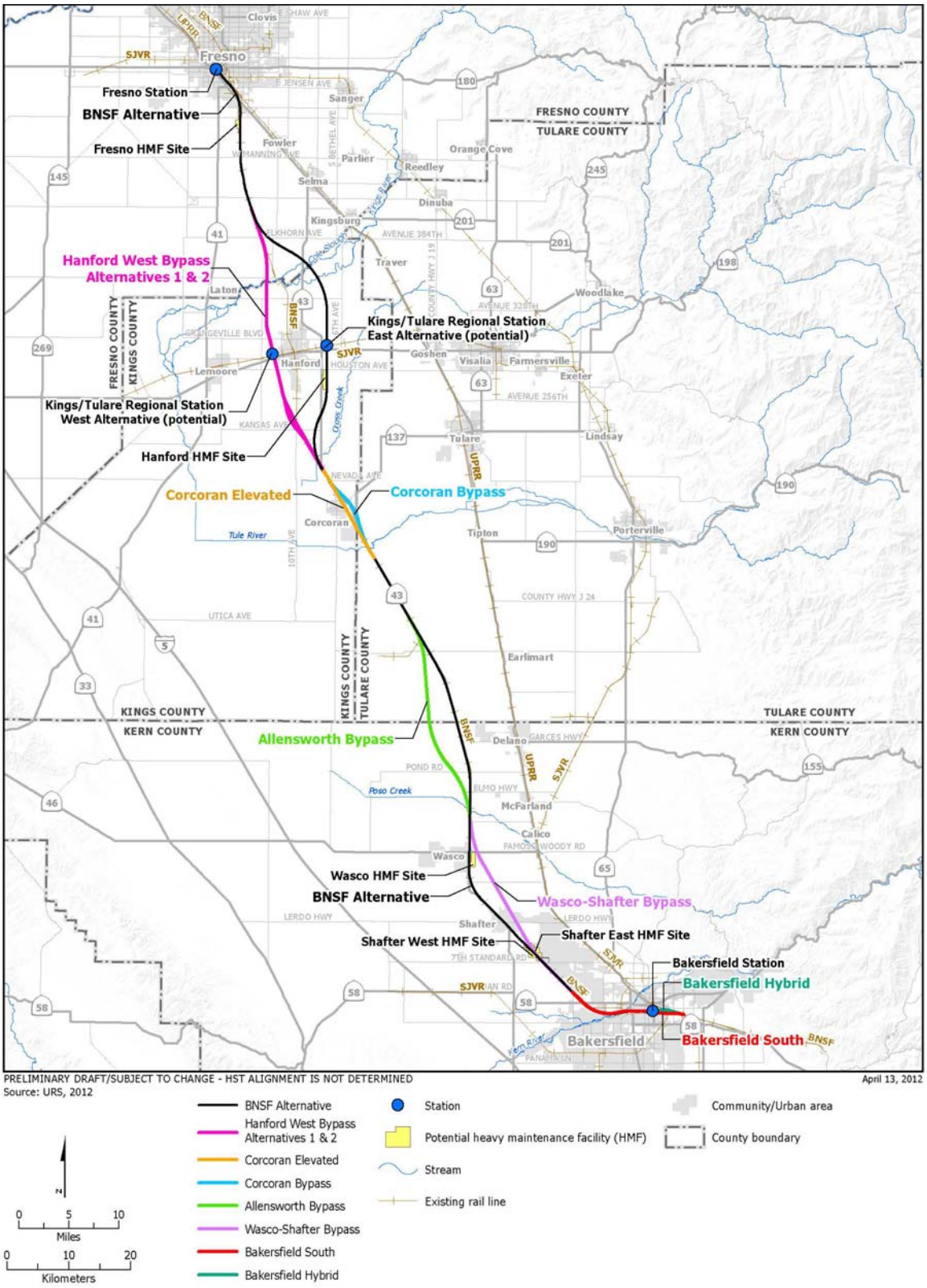

Figure 3
Fresno to Bakersfield Section project alternatives from Revised DEIR / Supplemental DEIS (Authority and FRA 2012f)